Britain's brightest weekly, packed with reviews and listings

Home Computing WEEKLY

An Argus Specialist Publication

No. 58
April 17-23, 1984

40p

WIN

200 prizes of Outback, a new game from Paramount must be won

Software reviews for:

Spectrum, BBC Dragon, Sord M5 and Texas

Easter Special:

great games for BBC and Electron to type in

Three fun listings for the Spectrum

PLUS:

programs to type in for the Commodore 64, Oric and Dragon

AND

U.S. Scene, your letters, software charts for SIX computers...

Amstrad's new micro: we bring you the facts

CRYPT
Spectrum 48K
CAMBRIDGE AWARD
WAR 70
WARGAMES
Adventure INTERNATIONAL 2
PIRATE ADVENTURE
AN ORIGINAL SCOTT ADAMS ADVENTURE
GLUG GLUG
CRL
For The ZX SPECTRUM 48K

Computers or games players?

Parents buy computers to give their children a head start in life — but most of them end up as games playing machines.

This is the sobering conclusion in a report based on a survey of more than 2,000 people about their knowledge of, and attitudes to, home computers.

It predicts that another one million home computers will be sold between now and November.

The study was drawn up by Marketing Direction, in conjunction with Gallup. Graham Tillotson, managing director of Marketing Direction, said: "We have found time and time again that

Continued on page 6

Black box hits pirates

Buyers of a new Dragon game will also find inside a black box about the size of a matchbox. It is a "software key", designed to halt piracy.

It is a test exercise by Microdeal, the Cornwall-based software house, and the game, Buzzard Bait, is due in the shops in 10 days, along with another 40 Microdeal titles.

Managing director John Symes said the box, containing unmarked chips, plugged into the Dragon's joystick port and de-encrypted the game.

He said: "It will cut out 99.9 per cent of piracy."

Buzzard Bait's author, Steve Back, was sent an encrypted coy and asked to decode it. Mr Symes said: "He spent three days on it and then told us: 'Forget it.'"

Mr Symes said Northern Software Consultants had been working on the key since August and the design costs ran into five figures.

Microdeal's games usually cost about £8, but Buzzard Bair will be priced at £9.95. Even then, said Mr Symes, Microdeal was losing money compared with its other products.

He said: "The industry will die without something like this. Only the other day we had a

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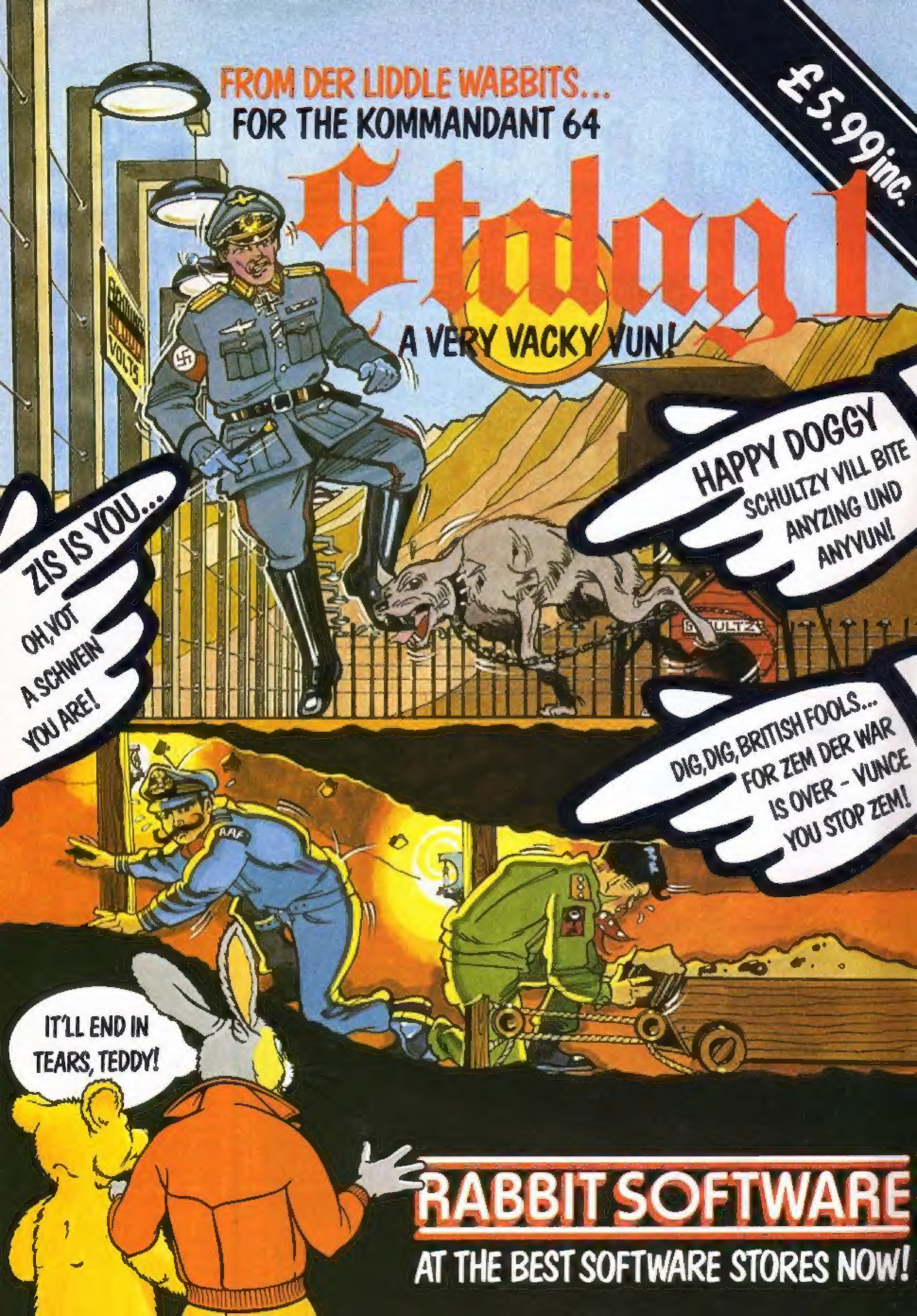
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Home Computing WEEKLY

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HOME COMPUTING
WEEKLY
BRITAIN'S BRIGHTEST

Type in our Easter Special for the BBC micro and have some fun. It starts on page 8.

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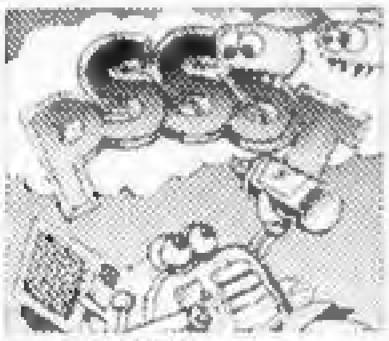

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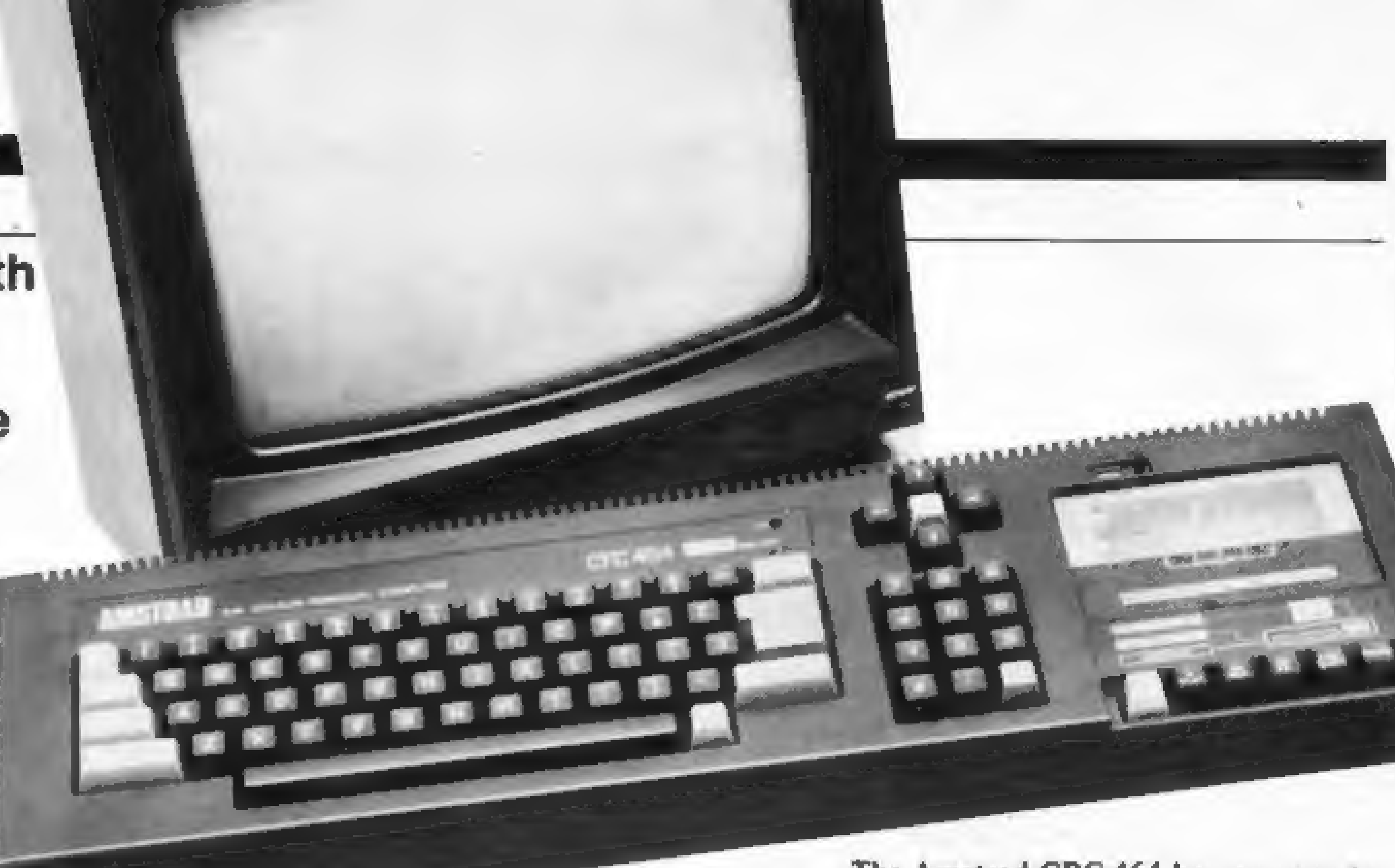
ULTIMATE PLAY THE GAME

Ultimate Play The Game is a trade name of Ashby Computers and Graphics Ltd., The Green, Ashby de la Zouch, Leicestershire, Tel (0530) 411485. Dealer enquiries welcome.

Amstrad's new micros: all the details

After success with hi-fi equipment, Amstrad has launched a range of competitively-priced home computers.

Paul Liptrot brings you the first full report



The Amstrad CPC 464 home computer

Four chain stores have agreed to take 200,000 of Amstrad's new all-in-one home computer — the whole production for this year — and they will be on sale in eight weeks.

Amstrad, best known for hi-fi, developed the four-model range in just 11 months, said chairman Alan Sugar, who made the decision after visiting a U.S. consumer electronics show.

All the new computers have a green screen or colour monitor, 64K of RAM, 32K of ROM, a Z80A processor running at 4MHz, 74 typewriter-style keys — including numeric keypad — and built-in cassette player or 3in Hitachi-style disc drive.

Price details:

System 1 with built-in cassette player and green monitor **£229**
System 2 with built-in cassette player and colour monitor **£329**
System 3 with disc drive and green monitor **£429**
System 4 with disc drive and colour monitor **£529**

Mr Sugar said the first 5,000 of the cassette player models would be delivered to Rumbelows, Comet, Dixons and Boots in the first week of June and production would rise to 50,000 a month, totalling 600,000 next year.

Fifty software packages would be available at launch, branded with the Amsoft name and written by both in-house programmers and well-known UK software houses.

Mr Sugar, whose company's name comes from Alan Michael Sugar Trading, said the concept of the CPC 464 range was similar to Amstrad's tower hi-fi systems which eliminated separate units with spaghetti-like wiring at the back. Now computer users would not have to find a compatible cassette recorder or use the family TV.

Amstrad faced a crisis earlier, said Mr Sugar, when there was a staff problem and a new team was recruited from Ambit International and Locomotive Software. At that stage the casing had been designed, but pen was first put to paper on the electronics in August 1983.

He said: "It is quite heart-warming that this is still possible in the UK."

The launch, held in the Great Hall of Westminster School, featured men called Shakespeare and Einstein and three children named Ravel, Archimedes and Monet who demonstrated the computers.

Amstrad CPC 464 BASIC keywords

ABS
AFTER invoke subroutine after given time
ASC
ATN
AUTO line numbering
BIN$
BORDER
CALL subroutine
CAT read and display file names
CHAIN
CHAIN MERGE
CHR$
CINT converts value to rounded integer in range -32768 . . . 32767
CLEAR
CLG clear graphics
CLOSEIN close cassette input file
CLOSEOUT
CLS
CONTinue
COS
CREAL converts value to a real number
DATA
DEF FN define function
DEFINT
DEFSTR
DEFREAL
DEGrees
DELETE
DIsable interrupts
DIM
DRAW line
DRAWR line to relative cursor position
EDIT
END
ENT tone
ENVelope
EOF test for end of file
ERASE
ERRor number
ERL error line
ERROR take error action with given number
EVERY calls subroutine at regular intervals
EXP
FIX removes figs to right of decimal point
FOR
FRE
GOSUB
HIMEM
IF
INK
INKEY
INKEY$
INP returns value from I/O port
INPUT
INSTR
JOYstick read
KEY
KEY DEFine
LEFT$
LEN
LET
LINE INPUT
LIST
LOAD
LOCATE
LOG
LOG10
LOWER$ converts string to lower case
MAX gets largest value
MEMORY
MERGE
MID$
MIN opp. of MAX
MODE
MOVE cursor
MOVER
NEW
NEXT
ON GOSUB
ON GOTO
ON BREAK GOSUB
ON BREAK STOP
ON ERROR GOTO
ON SQ GOSUB
OPENINput file
OPENOUT
ORIGIN start point for cursor
OUT
PAPER
PEEK
PEN
PI
PLOT
PLOTR
POKE
POSition
PRINT
RADIAN
RANDOMIZE
READ
RELEASE sound
REM
REMAIN disables specified delay timer
RENUM
RESTORE
RESUME
RETURN
RND
ROUND a numeric expression
RUN
SAVE
SGN
SIN
SOUND
SPACE$ to given length
SPEED INK for alternate colours
SPEED KEY alter auto repeat
SPEED WRITE select baud rate
SQ check sound channel
SQR
STOP
STR$
SYMBOL redefine character
SYMBOL AFTER number of permissable UDGs
TAG mix text and graphics
TAGOFF
TAN
TEST reports on INK value
TESTR
TIME
TRON
TROFF
UNT
UPPER$ converts to upper case
VAL
VPOS returns vert. of cursor
WAIT until given I/O port returns particular value
WEND
WHILE
WIDTH
WINDOW
WINDOW SWAP
WRITE
XPOS horiz. pos. of cursor
YPOS
ZONE changes width of print zone

Several Japanese computer makers are launching models here this year, all using the MSX standard, designed to ensure software is compatible between computers. Asked about this, Mr Sugar said: "In my opinion the Japanese are not going to get a look in. It's what the computer can do that's important — and the support and software — not the operating system."

He contrasted the success of Sinclair, Acorn's BBC micro and US computers with those from Japan. And he said of his own range: "We are quite happy to stand head-to-head with them."

William Poel, chairman of Amsoft, said 48K of the 64K of RAM was useable by the industry standard BASIC, which also featured interrupt handling and extensions for graphics and sound. A version of HiSoft's Pascal was available, along with an assembler/disassembler and machine code monitor.

Peripherals would include a pair of joysticks, module for additional ROMs and a modulator to allow the use of televisions instead of Amstrad's monitors.

The CPC 464 has three display modes, using colours selected from a palette of 27 (including black):

mode	No. of INKs	Vert. pixels	Horiz. pixels	chars
normal	4	200	320	40 x 25
high res	2	200	640	80 x 25
multi-col	16	200	160	20 x 25

Colour: the screen border can be set to any pair of colours regardless of mode and can be steady or flashing, with user-definable repeat rates. Each screen INK can be set in the same way
Windows: up to eight text windows and a graphics window can be used
Sound: the CPC464 uses a sound generator from General Instruments' AY8910 family. It gives three voices (channels), each of which can be independently set for tone and amplitude. White noise (i.e. for explosions) can be added. The three channels appear as left, right and centre — using the stereo extension jack and the computer's internal speaker produces a mixed mono output of seven octaves.
Input/output: edge connector for expansion and Centronics type printer, nine-pin joystick socket, six-pin socket for RGB etc, 3.5mm socket for stereo sound output, 5mm socket for power supply.
Cassette recorder is software switchable between 1K and 2K baud.
Keyboard unit is matt black with the alphanumeric keys — up to 32 user-definable — in black and others in blue (ENTER) and red and the numeric keypad on the right is below the cursor keys. The unit measures 580mm wide, 70mm high and 170mm deep and weighs 2.4kg.
Systems 3 and 4 in the range will have CP/M, the industry-standard operating system for business computers, and Logo, the educational language, built in, as well as a single 3in disc drive, claimed to hold about 150K on single-sided discs.
Monitors: both the green screen model (GT 64) and the colour model (640) contain the computer's power supply.

The keyboard unit and monitors are made in Korea, the joystick in Taiwan and power supply/modulator is made in the UK.

NEWS

Game players?

From front page

middle-class parents are the kind of people most likely to buy home computers.

"They tend to buy them because they believe that it will give their children an advantage in life.

"But we also know that what actually happens is that the child — usually a boy — ends up using it solely for playing games.

"So much for the £125, £199 or even £399 investment in the child's future."

Mr Tillotson said the most important sources of information for potential buyers were people who already own micros.

He said: "For the first time, we have a large installed base of home computers in this country.

"When next Christmas rolls around and new purchasers ask the people next door whether it was worth buying a computer for the kids, I wonder what the answer will be.

"If the answer is 'no' then I sense the writing may be on the wall for home computers."

The survey also showed that only half of the people questioned could name a single home computer brand, despite an estimated £37m spent last year by the makers on advertising.

Sinclair and Commodore were, as expected, at the top with BBC, Atari and Apple next. Brands like Lynx and Oric were virtually unknown.

When prompted, Atari's name shot ahead of Sinclair's in people's minds. The theory is that, although the company spent relatively little on advertising, it is well known for its games players.

Mr Tillotson said: "There is still a tremendous ignorance about home computers.

"Spontaneous awareness of brands is low, brand images have barely formed and people's awareness and knowledge of even quite commonly used jargon is at a low level."

Respondents were shown a list of 18 terms, like "micro", "software" and "user-friendly". The highest awareness figure for any of them was 55 per cent, and that was the percentage of those who knew the word "micro".

Mr Tillotson said: "We didn't do anything clever in this part of the survey, like asking people to define the words they claimed to know — if they said they understood the meaning of the word, we assumed that they were being honest.

"If, in fact, some of them weren't telling the whole truth, then the level of understanding out there is much worse than the figures show."

Last year 1.7m computers — total cost £300m were sold at an average price of £170.

Marketing Direction's study is called the GB Market for Home Computers, General Attitude Study, which is carried out each year. The company also has a more frequent study called the Personal Computer and Video Games Users Survey.

Marketing Direction, 6 High Street, Thames Ditton, Surrey KT7 0RY

Black Box

From front page

letter from a boy who said he was paying a pound to a group for copies of games."

Microdeal had placed an initial order of 25,000 of the keys and a patent had been applied for.

Mr Symes said: "We will make it available on our future releases. We will then, hopefully, be ordering more and hope to bring the price down."

It would also be offered to other software companies. And Mr Symes said it would be priced to them at a figure which would recoup Microdeal's investment only.

He said: "After all, while people are playing other companies' ripped off games they are not buying ours."

And he said that Buzzard Bait had been chosen for the test because it was the best of the 41 being released. The others, which include a small number of conversions, are for the Commodore 64, Atari, Dragon, Aquarius, Spectrum, Oric, Electron, BBC, Tandy Colour and VIC-20.

Mr Symes said that eventually he wanted the software key available for all popular computers, if the demand was there. As it used the joystick port, it would only work on some if they had a joystick interface.

He explained that the key, packed with the cassette in a video-style case, had several routines, each of which cross-checked with another before running the game. A differently programmed key was needed for each game.

Even if a user managed to stop the game and list it, all he would see would be meaningless garbage, said Mr Symes.

Microdeal, 41 Truro Rd, St Austell, Cornwall PL25 5JE

TWO MEN'S VIEW

Why settle for BASIC?

Having used BASIC, Pascal, Forth, Logo and various other languages, we fail to see why people settle for BASIC, which we feel is one of the most complicated.

Pascal and Forth, for example, are much easier to use because of proper programming structures which remove the need for complicated jumping. It is much easier to understand WHILE hungry, EAT than 10 IF hungry THEN eat: GOTO 10 — or at least we think so.

One version of BASIC which comes very close to being structured is BBC BASIC. However, it totally misses the point. What is the point in having procedures, functions and constructs like FOR... NEXT and REPEAT UNTIL when one still has to jump over a procedure (with GOTO) to stop it being inadvertently executed? Also the commands GOTO and GOSUB — the definite sins of structured programming — are in the language when they should really be redundant.

Normally there is no provision in BASIC for named procedures or subroutines, so programs begin to get totally unreadable when there are jumps and subroutine calls to line numbers.

And BASIC has no data type declaration facilities like Pascal and Forth. Programs tend to use variables of a very limited type. Admittedly, some BASIC variants can predefine variables to be string, real, integer or double precision. But with most popular home computers, such as the Atari, Commodore 64, VIC-20, Spectrum and BBC, this is impossible.

For most tasks integer arithmetic will suffice, and is usually much faster than real arithmetic. But the BBC requires a per cent sign after variables to denote integers, so making programs even more unreadable, with these per cent signs scattered all over the place. The Spectrum doesn't even have integer variables!

*Another thing that adds to unreadability is the use of numbers to represent commands, as in *FX, VDU, PLOT and ENVELOPE on the BBC and the confusing use of POKE to control the graphics on unexpanded Commodore computers. What is wrong with simple English commands?*

For Acorn to encourage the use of BBC BASIC in schools is totally naive. It is senseless to promote a language which is both BASIC and non-standard. Why not teach Logo or Pascal instead? What is this fascination with BASIC? Why don't people see the light?

We own Epson HX-20s and Jupiter Aces and for the Ace we have Pascal, Forth and the excellent assembler from Transam. To be honest, we have hardly used BASIC for months.

Our suggestion to you is to think very carefully about buying a decent language for whatever computer you own. It really is easy to use proper languages provided you have an open mind.

A. Hegedus and D. Sutton
East Sheen, London SW14

● This space is for you to sound off about the micro scene, to present bouquets, to hurl brickbats, or just to share your opinions or experiences. Contributions from individuals earn a fee. Send your views to Paul Liptrot, Editor, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

COMPETITION

Must be won: 200 prizes of Outback, a new game from

PARAMOUNT SOFTWARE

Baby kargaroos are under threat from cunning swagmen in Outback, Paramount's new game for the VIC-20 and Commodore 64.

In-house author Jason Benhams puts you in charge of the Boss Roo who has to defend the outback.

You can win a copy of Outback. We've got 200 to give away — 100 each for the VIC-20 and Commodore 64 — to winners of our spot the difference competition.

According to Bob Horsham, Paramount's marketing director, a team effort is needed for top quality software. To aid this, the company is altering its headquarters to create a building equipped for film visuals, graphic design and research.

Outback costs £7.50 for the Commodore 64 and £5.50 for any VIC-20 — which means that the total prize value is £1,300.

Paramount, of 67 Bishopton Lane, Stockton on Tees, Cleveland TS18 1PU, also has Megawarz for the Commodore 64 (£7.50), Jogger (VIC-20, £5.50), Chocabloc (VIC plus 8K/16K, £6.50), Countdown (VIC plus 8K/16K, £5.50) and Castle of Doom and Sporting Decathlon (both £6.50 for the Dragon 32).

How to enter

Study the two cartoons and try to find all the differences. Mark the differences on cartoon B by circling them with a ballpoint pen and then fill in your name, full address, the number of differences you found and your computer. Please write clearly — if you are a winner, the coupon will be used as a label.

Seal the marked drawing and the coupon in an envelope and write clearly on the back of the envelope the number of differences you found and your computer: VIC-20 or Commodore 64. Do not enclose anything else.

Post your entry to Paramount Software Competition, Home Computing Weekly, No. Golden Square, London W1R 3AB.

Entries close at first post on Friday, May 4.

You may enter as many times as you wish, but all entries must be on the official coupon and cartoon; copies will not be accepted.

The winners will be the first 100 correct entries from VIC-20 owners of the Commodre 64 opened at random.

The solution and the names of the winners will appear in Home Computing Weekly and the prizes will arrive from Paramount within 28 days of the publication of that issue, or before.

Important: please follow these guidelines carefully. Incomplete entries cannot be accepted.

The rules

Entries close at first post on Friday, May 4 1984 and the guidelines in the How to enter section form part of the rules. Entries will not be accepted from employees of Argus Specialist Publications, Paramount Software and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

Paramount Software Competition

Entry Coupon

Name ________________________

Address ________________________

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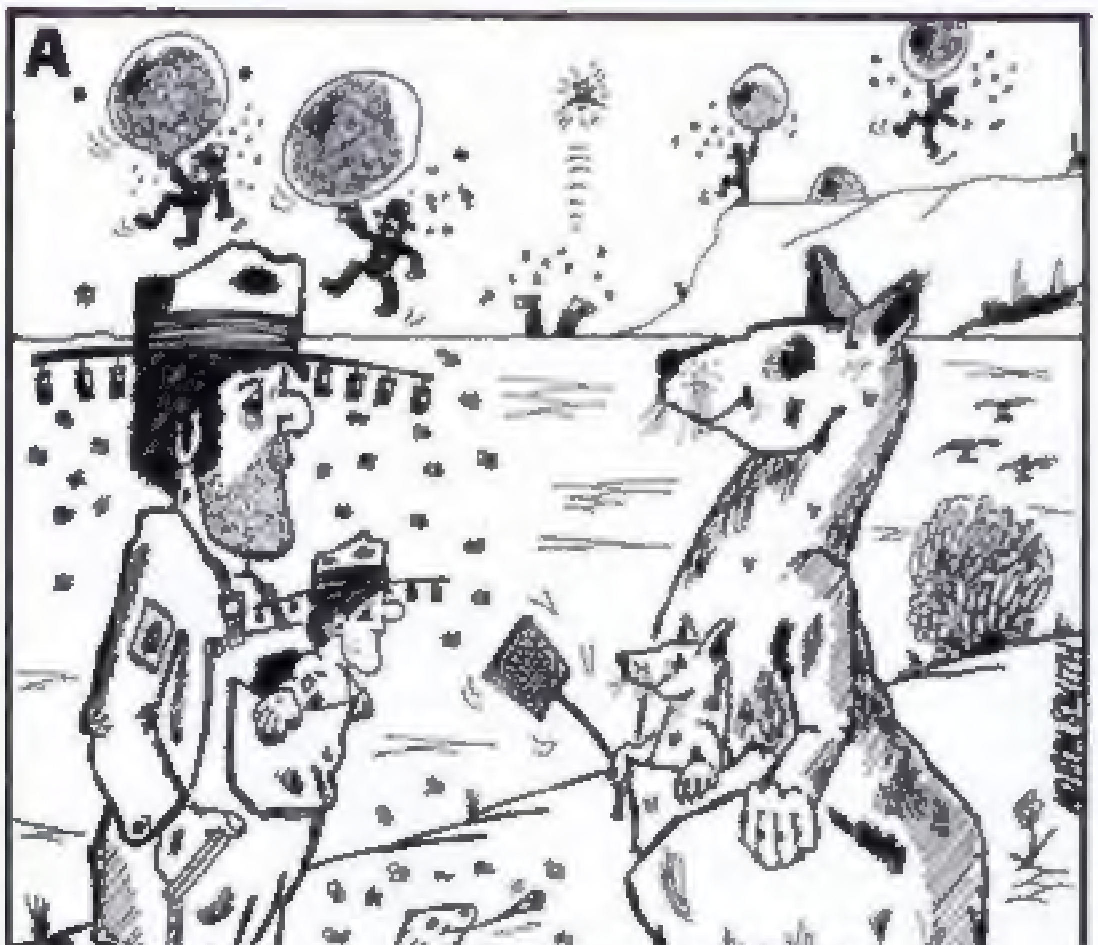
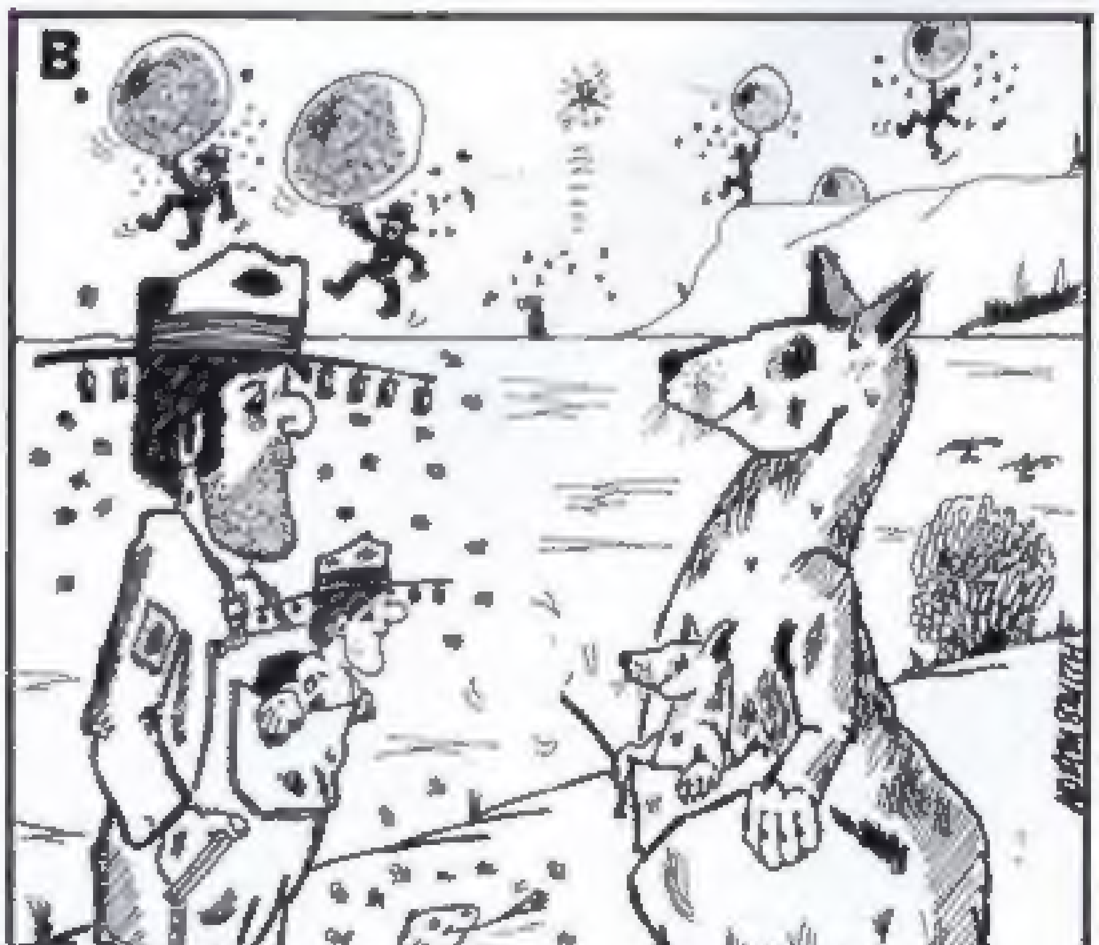
Computer (VIC-20 or Commodore 64 only) ____________

Number of differences found ____________

Complete clearly; if you are a winner this will act as a label for your prize. Post to Paramount Software Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Entries close at first post on May 4.





Easter spe
Peck the w
and save y
planet

Chocky Egg by Dave Carlos and Jon Revis

Which came first, the chicken or the chocolate egg? This is a question which has puzzled scholars for centuries now.

The well known Cadbury group believe it was the chocolate egg while any farmer will claim the chicken was first. This program tries to solve the deadlock by making it quite plain that it was of course the worm which came first. For without worms there are no chickens to lay eggs and no eggs to become chickens.

The aim of this program is to see how many worms you can peck before you run out of chickens in the coop. If you manage to peck five worms from the 10 that come to the surface each day then you get to lay your chocolate egg and upon its hatching get another life.

Unfortunately the chicken you command is low down in the pecking order so not only does she have to peck for herself but must also suffer the harassment of being constantly henpecked by the top chick too. This disturbs the concentration and leads to a momentary hesitation.

The final hazards to our modern-day chicken are the buried radioactive rocks which do rather strange things to worms. Any worm passing too close to such a rock is immediately turned into a rather nasty radiation beam which, yes you guessed it, kills chickens.

So if the wiggly worm does stray towards the rocks our advice is to keep your chicken well clear!

Control is by pressing Z to move left and X to move right. If you wish to peck then press return. The way to eat worms is to get right over them and then peck just as they get to the surface.

If you are not right on the worm or don't peck at just the right time then you will have lost your chance with that worm.

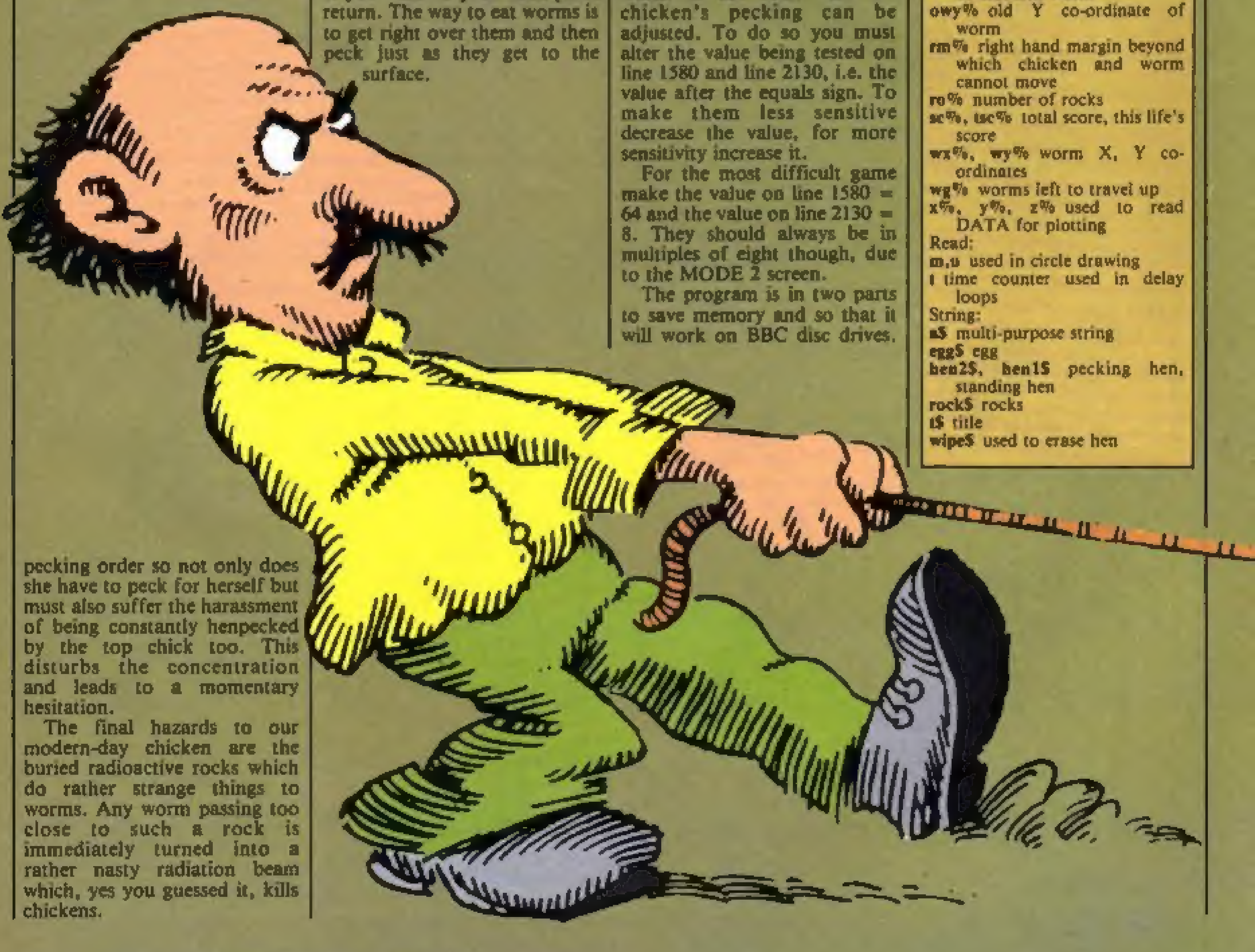
The sensitivity of both the worm to the rocks and the chicken's pecking can be adjusted. To do so you must alter the value being tested on line 1580 and line 2130, i.e. the value after the equals sign. To make them less sensitive decrease the value, for more sensitivity increase it.

For the most difficult game make the value on line 1580 = 64 and the value on line 2130 = 8. They should always be in multiples of eight though, due to the MODE 2 screen.

The program is in two parts to save memory and so that it will work on BBC disc drives.

Variables

Integer:
co% multi purpose counter
c% colour code
col% colour selected at random
col2% different colour from col%
flag% used with modulus to decide which worm to print
fl% test for user input
flr% rock flag = −1 if a rock hit, otherwise = 0
lives% number of lives left
ox%, owx% old X co-ordinates of chicken, worm
owy% old Y co-ordinate of worm
rm% right hand margin beyond which chicken and worm cannot move
ro% number of rocks
sc%, tsc% total score, this life's score
wx%, wy% worm X, Y co-ordinates
wg% worms left to travel up
x%, y%, z% used to read DATA for plotting
Read:
m,u used in circle drawing
t time counter used in delay loops
String:
a$ multi-purpose string
egg$ egg
hen2$, hen1$ pecking hen, standing hen
rock$ rocks
t$ title
wipe$ used to erase hen



Two great games from HCW regulars. One works on both the BBC and Electron and the second is BBC only

cial: orm our

Listing 1 sets all the user-defined characters and the sound envelopes which are then put to use in **Listing 2**. This is a good technique for saving memory on the BBC machine.

We have also put spaces into the listing after every BBC word. These are not strictly necessary and can be left out if you wish. They are there for clarity only (this also applies to the REMs).

The program has been tested on the BBC Model B and Electron micros. On the Electron the progress is rather slow but the game is actually no easier. If the BBC has discs then you should include the line in listing 1 which sets PAGE to &1200.

The program has few REMarks in order to save memory and to make things as fast as possible but the PROCedure names are supposed to be self explanatory and should help you to see what is happening.

The use of strings to change both graphics colours and to move around the screen is a little unusual. They were used to make it easy to print the multi-coloured characters, some of which need 10 actual characters to be printed. This technique can save a lot of memory if used wisely.

You will also search in vain for the program title. It is held in ACII codes and READ into the t$. Greatest care needs to be taken over typing the DATA lines. A single mistake here can be very hard to find and can have highly unpredictable results.

The use of an absolute value (ABS) to test the proximity of the chicken, and of the rocks, to the worm is also a little unusual. The technique is based on the idea that if they are close together then subtracting the x co-ordinate values will give a fairly small answer. We are not really interested in whether the direction is left or right so the ABS function converts this to a positive value.

There are two initialisation routines setting variables, one for the whole program (init1) and one which resets everything before each new life or sheet (init2).

The funtion FNrock tests to se if the worm is close to one of them. If it is then the value −1 (true on a BBC) is returned, if not then 0 is returned and the progr continues accordingly.

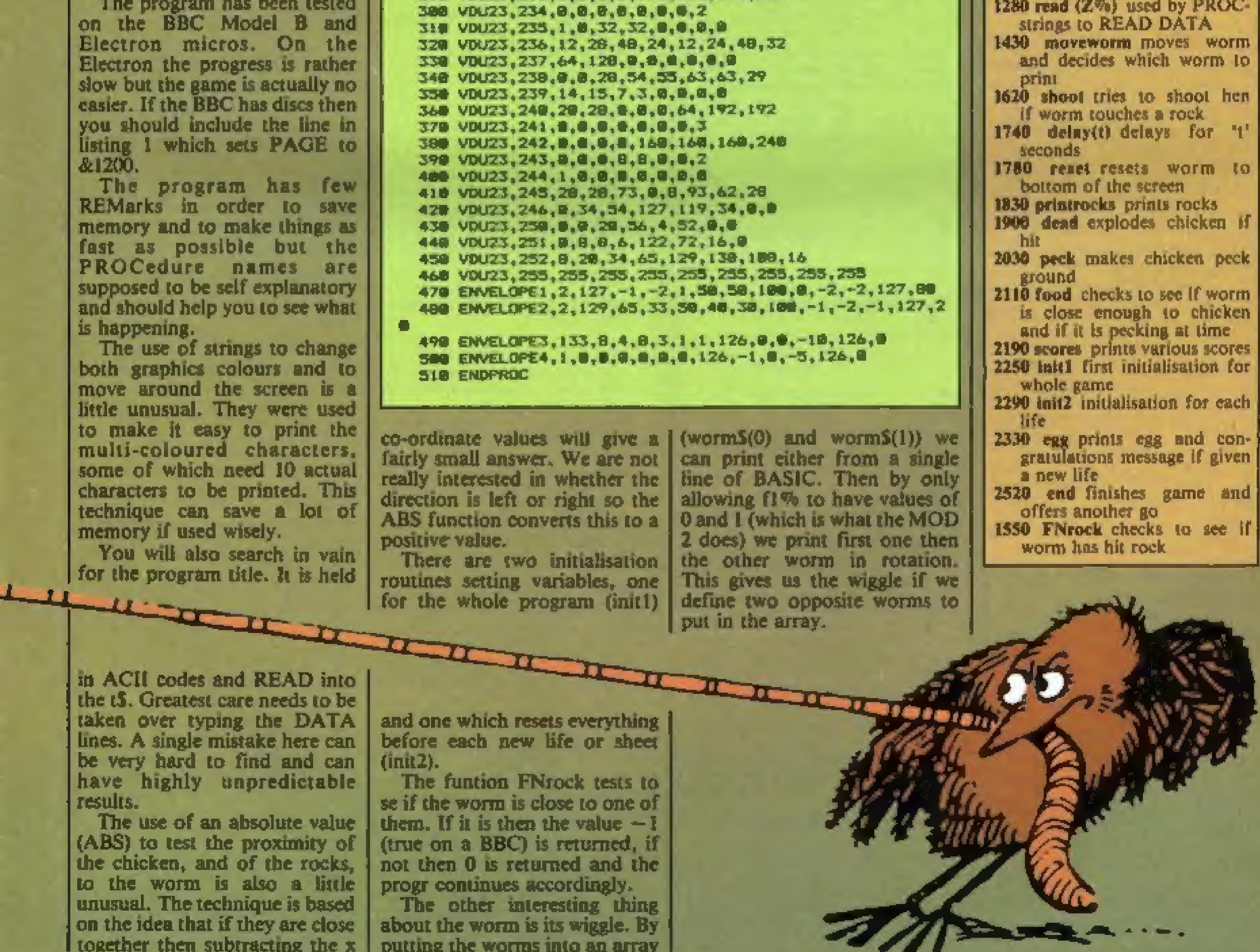
The other interesting thing about the worm is its wiggle. By putting the worms into an array (worm$(0) and worm$(1)) we can print either from a single line of BASIC. Then by only allowing f1% to have values of 0 and 1 (which is what the MOD 2 does) we print first one then the other worm in rotation. This gives us the wiggle if we define two opposite worms to put in the array.

Listing 1 — Chocky Egg, part 1, defines characters

```
   10 PROCchars
   20 MODE2
   30 VDU23;8202;0;0;0;
   40 COLOUR132
   [illegible] CLS
   60 COLOUR1
   70 PRINTTAB(0,3)STRING$(20,CHR$(232));TAB(0,27)STRIN
G$(20,CHR$(236))
   [illegible]
   90 PRINTTAB(9,5);CHR$224;CHR$225;TAB(9,24);CHR$224;C
HR$225
  100 COLOUR10
  110 PRINTTAB(5,10)"Chocky Egg";TAB(0,14)"Easter Enter
tainment"
  120 COLOUR3
  130 PRINTTAB(1,18)"Z = left  X = right";TAB(3,20)"Ret
urn = Peck"
  140 [illegible]
  150 VDU28,3,30,16,25
  160 CLS
  170 PAGE=&1200: REM ** ONLY NEEDED BY DISC USERS ***
  180 CHAIN"EGG2"
  190 DEFPROCchars
  200 VDU23,224,240,128,162,162,162,187,128,240
  210 VDU23,225,0,0,181,166,165,181,0,0
  220 VDU23,226,0,0,0,0,7,15,31,29
  230 VDU23,227,62,63,95,95,120,112,0,0
  240 VDU23,228,0,0,0,0,192,224,224,240
  250 VDU23,229,184,112,240,224,0,0,0,0
  260 VDU23,230,0,0,0,0,0,32,32,32
  270 VDU23,231,64,64,0,0,0,0,224,161
  280 VDU23,232,48,56,12,24,48,24,12,4
  290 VDU23,233,0,0,0,0,176,152,136,220
  300 VDU23,234,0,0,0,0,0,0,0,2
  310 VDU23,235,1,0,32,32,0,0,0,0
  320 VDU23,236,12,28,48,24,12,24,48,32
  330 VDU23,237,64,128,0,0,0,0,0,0
  340 VDU23,238,0,0,28,54,55,63,63,29
  350 VDU23,239,14,15,7,3,0,0,0,0
  360 VDU23,240,28,28,0,0,0,64,192,192
  370 VDU23,241,0,0,0,0,0,0,0,3
  380 VDU23,242,0,0,0,0,160,160,160,240
  390 VDU23,243,0,0,0,0,0,0,0,2
  400 VDU23,244,1,0,0,0,0,0,0,0
  410 VDU23,245,28,28,73,0,8,93,62,28
  420 VDU23,246,0,34,54,127,119,34,0,0
  430 VDU23,250,0,0,28,36,4,52,0,0
  440 VDU23,251,0,8,0,6,122,72,16,0
  450 VDU23,252,8,28,34,65,129,130,100,16
  460 VDU23,255,255,255,255,255,255,255,255,255
  470 ENVELOPE1,2,127,-1,-2,1,50,50,100,0,-2,-2,127,80
  480 ENVELOPE2,2,129,65,33,30,40,30,100,-1,-2,-1,127,2
0
  490 ENVELOPE3,133,8,4,0,3,1,1,126,0,0,-10,126,0
  500 ENVELOPE4,1,0,0,0,0,0,0,126,-1,0,-5,126,0
  510 ENDPROC
```

How it works
PROCedures

210 background prints all the background features before each sheet
390 lines draws planks on hen house
490 sun plots sun and rays
620 lives prints number of chickens left in henhouse
690 title (X%,Y%) prints coloured title in x,y position specified
800 cluck makes clucking noises and printing
920 plot (N%) reads data statements for various plotting and colour changes required
1000 walkhen moves hen in desired direction
1080 input gets key inputs from user
1160 strings defines various character strings from DATA statements
1280 read (Z%) used by PROCstrings to READ DATA
1430 moveworm moves worm and decides which worm to print
1620 shoot tries to shoot hen if worm touches a rock
1740 delay(t) delays for 't' seconds
1780 reset resets worm to bottom of the screen
1830 printrocks prints rocks
1900 dead explodes chicken if hit
2030 peck makes chicken peck ground
2110 food checks to see if worm is close enough to chicken and if it is pecking at time
2190 scores prints various scores
2250 init1 first initialisation for whole game
2290 init2 initialisation for each life
2330 egg prints egg and congratulations message if given a new life
2520 end finishes game and offers another go
1550 FNrock checks to see if worm has hit rock



Alien Fallout by Shingo Sugiura

You are the sole defender of the planet Gorgon. All the others in your position have been wiped out in previous attacks by the aliens. How long can you protect your people?

Type in **Listing 3** and SAVE it under the name ALIEN and then type in **Listing 4** and SAVE it under the name FALLOUT just after ALIEN.

If your system is tape based it it vitally important that you SAVE FALLOUT before you run it as it will over-write itself and you'll have to type it in all over again!

How it works
Alien

10-40 REM statements
50 call a PROCedure which defines characters and envelopes
60 select MODE7
70 print title page
80 CHAIN in main program
100-220 PROCedure to print the title page
310-520 define characters

However, once you have typed it all in — and provided it's correctly entered — the first program will automatically reset PAGE to the appropriate value and CHAIN in the second program.

When the main program is loaded a brief set of instructions will appear and it will wait for you to press the space bar.

Then the screen will clear and you will see the aliens at the top with your tiny ship at the bottom of the screen.

Press Z, X and shift to move left, right and fire respectively. You must prevent them from reaching the surface for as long as you can.

Variables

death number of dead aliens
landed boolean to indicate your death
fired boolean to indicate whether there's a missile on the screen or not
x% X co-ordinate of your ship
al%(X) array of holding the position of the aliens
bx% X co-ordinate of missile
by% Y co-ordinate of missile
score% current score
sc(X) array of scores

When your spacecraft is destroyed and your score is in the top eight you will be asked to enter your name and the hall of fame will be displayed.

The sound can be switched off or on at any time during the game by pressing Q or S.

Note: When you type in the program it is essential to enter the £ sign, in line 1280, as a hash symbol. This is brought about by the fact that the ASCII code for hash on the BBC corresponds to the code for £ on the printer.

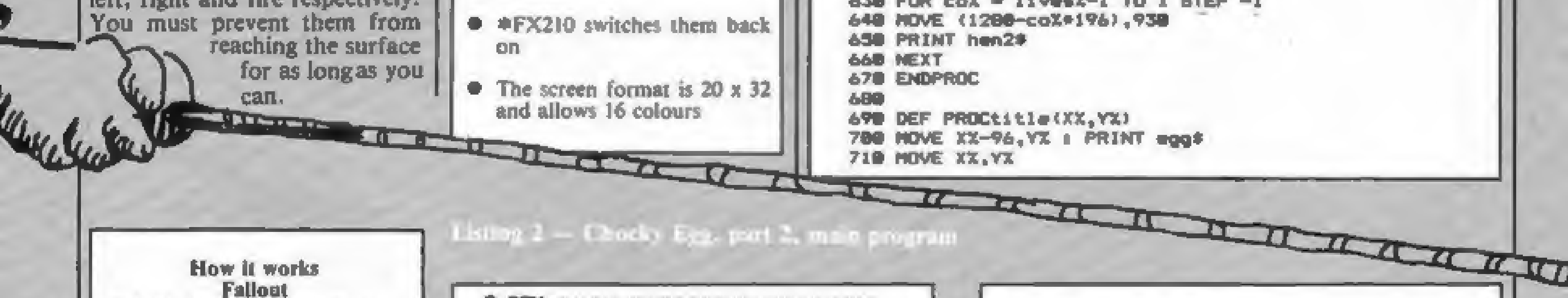
Hints on conversion

I hae not used many BBC specific commands so conversion should not prove too difficult. However, here are some hints:

- Replace all PROCxxx with GOSUBSs
- Replace all REPEAT UNTIL loop with GOTOs
- The short machine code routine is a simple routine which returns the code of the character at the current cursor position
- *FX210,1 switches off all sounds
- *FX210 switches them back on
- The screen format is 20 x 32 and allows 16 colours

How it works
Fallout

10 initialise variables and assemble a short machine routine
20 select MODE7 and print instructions
40-50 main loop
170-320 game itself
330-410 death
420-500 move aliens
510-580 move missile
590-660 hit an alien
670-730 initialise
740-900 set up screen
910-1230 hall of fame
1240-1320 assemble a short machine code routine
1330-1360 delay routine
1370-1520 instructions

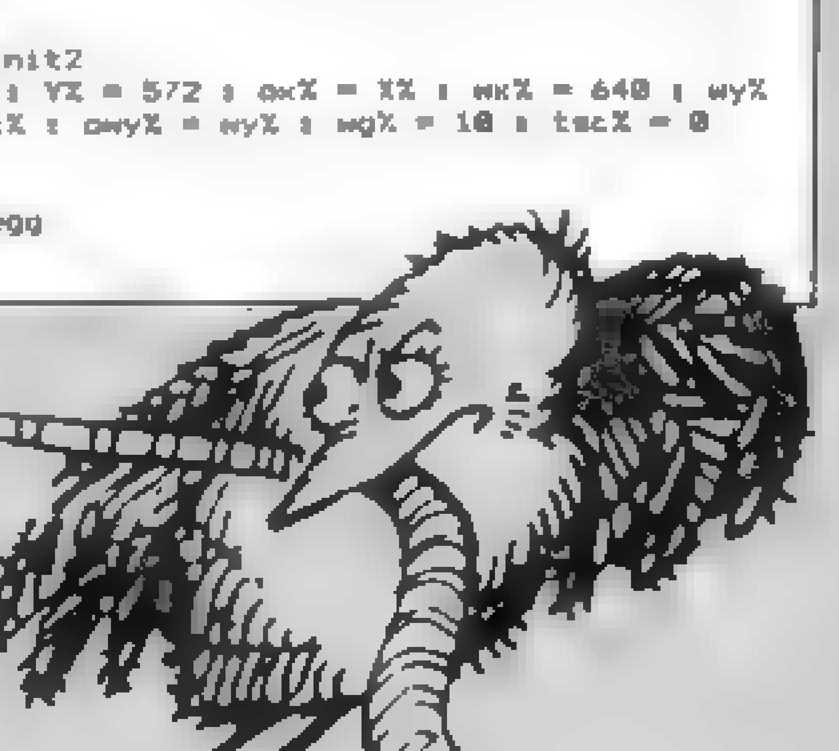


Listing 2 — Chocky Egg, part 2, main program

```
  0 REM ******************************
  1 REM ***                        ***
  2 REM ***      CHOCKY  EGG       ***
  3 REM ***          by            ***
  4 REM ***      Dave Carlos       ***
  5 REM ***           &            ***
  6 REM ***       Jon Revis        ***
  7 REM ***          for           ***
  8 REM ***Home Computing Weekly***
  9 REM ******************************
 10 REM *** CHOCKY EGG SECOND PROG ***
 20 MODE 2
 30 VDU 23;8202;0;0;0;5
 40 PROCinit1
 50 PROCstrings
 60 REPEAT
 70 PROCinit2
 80 PROCbackground
 90 PROCreset
 100 PROCwalkhen
 110 REPEAT
 120 PROCinput
 130 IF RND(40) = 1 PROCcluck
 140 UNTIL wg%<=0 : lives% = lives%-1
 150 UNTIL lives% = 0
 160 PROCend
 170 CLS
 180 VDU 4
 190 END
 200
 210 DEF PROCbackground
 220 RESTORE 330
 230 VDU 26
 240 PROCplot(40)
 250 VDU 5 : MOVE 1060,690 : PRINT hen1$ : VDU 4
 260 PROCscores
 270 PROCsun
 280 PROClives
 290 PROCtitle(300,1000)
 300 *FX9,10
 310 *FX10,10
 320 ENDPROC
 330 DATA 18,0,6,4,0,512,85,1279,0,85,1279,512,18,0,4,
4,1279,1023,85,0,512,85,0,1023,18,0,3,4,992,512,4,992,7
68,85,1216,512,85,1216,832
 340 DATA 4,1225,840,4,944,752,85,944,772,4,1225,840,8
5,1225,860,4,992,569,4,928,512,85,900,512,4,992,569,85,
992,589
 350 DATA 18,0,0,4,1216,512,5,1216,832,5,944,752,5,944
,772,5,1225,860,5,1225,840,5,1216,832
 360 DATA 4,992,768,5,992,512,4,992,569,5,928,512,5,90
0,512,5,992,589
 370 DATA 18,0,7,4,1040,630,4,1040,704,85,1172,630,85,
1172,704,18,0,0,5,1040,704,5,1040,630,5,1172,630,5,1172
,704
 380
 390 DEF PROClines
 400 GCOL 0,0
 410 x% = 1000
 420 FOR y% = 768 TO 828 STEP 10
 430 MOVE x%,y%
 440 PLOT 29,x%,512
 450 x% = x%+32
 460 NEXT
 470 ENDPROC
 480
 490 DEF PROCsun
 500 VDU 29,128;896;
 510 GCOL 0,3
 520 R% = 50
 530 N% = 0
 540 FOR a = 0 TO 2* PI- PI/R% STEP PI/R%
 550 a = N%*0.2 : IF a = INT(a) THEN R% = R%+3
 560 MOVE 0,0 : DRAW R%* COSa,R%* SINa
 570 N% = N%+1
 580 R% = 50
 590 NEXT : VDU 29,0;0;
 600 ENDPROC
 610
 620 DEF PROClives
 630 FOR co% = lives%-1 TO 1 STEP -1
 640 MOVE (1200-co%*196),930
 650 PRINT hen2$
 660 NEXT
 670 ENDPROC
 680
 690 DEF PROCtitle(X%,Y%)
 700 MOVE X%-96,Y% : PRINT egg$
 710 MOVE X%,Y%
 720 GCOL 0,3
 730 PRINT t$
 740 MOVE X%+8,Y%+4
 750 GCOL 0,1
 760 PRINT t$
 770 MOVE X%+660,Y% : PRINT egg$
 780 ENDPROC
 790
 800 DEF PROCcluck
 810 RESTORE 890
 820 SOUND 1,1,90,2
 830 PROCplot(10)
 840 VDU 224,225
 850 PROCdelay(.1)
 860 GCOL 0,4 : MOVE 720,660 : VDU 255,255
 870 PROCplot(9)
 880 ENDPROC
 890 DATA 18,0,7,4,984,672,21,848,710,4,984,656,21,896
,675,4,984,640,21,896,615,4,984,630,21,888,555,4,728,66
0
 900 DATA 18,0,4,4,984,672,21,848,710,4,984,656,21,896
,675,4,984,640,21,896,615,4,984,630,21,888,555
 910
 920 DEF PROCplot(N%)
 930 FOR co% = 1 TO N%
 940 IF co% = 38 PROClines
 950 READ x%,y%,z%
 960 IF x% = 18 THEN VDU 18,y%,z% ELSE VDU 25,x%,y%;z%
;
 970 NEXT
 980 ENDPROC
 990
1000 DEF PROCwalkhen
1010 MOVE ox%,Y%
1020 PRINT wipe$
1030 MOVE X%,Y%
1040 PRINT hen1$
1050 ox% = X%
1060 ENDPROC
1070
1080 DEF PROCinput : fl% = 0
1090 IF INKEY-98 AND X%>32X% = X%-32 : fl% = 1
1100 IF INKEY-67 AND X%<rm%X% = X%+32 : fl% = 1
1110 IF fl% = 1 PROCwalkhen ELSE PROCdelay(0.1)
1120 IF INKEY-74 PROCpeck
1130 PROCmoveworm
1140 ENDPROC
1150
1160 DEF PROCstrings
1170 RESTORE 1350
1180 PROCread(49) : hen2$ = a$
1190 PROCread(49) : hen1$ = a$
1200 PROCread(9) : wipe$ = a$
1210 PROCread(13) : rock$ = a$
1220 PROCread(9) : t$ = a$
1230 PROCread(3) : worm$(0) = a$
1240 PROCread(3) : worm$(1) = a$
1250 PROCread(8) : egg$ = a$
1260 ENDPROC
1270
1280 DEF PROCread(Z%)
1290 a$ = ""
1300 FOR c% = 0 TO Z%
1310 READ co%
1320 a$ = a$+ CHR$(co%)
1330 NEXT
1340 ENDPROC
1350 DATA 18,0,3,226,8,18,0,1,230,8,18,0,0,234,18,0,3,
228,8,10,18,0,3,229,8,18,0,1,233,8,18,0,0,237,8,8,18,0,
3,227,8,18,0,1,231,8,18,0,0,235
1360 DATA 18,0,3,238,8,18,0,1,240,8,18,0,0,243,18,0,3,
228,8,10,18,0,3,229,8,18,0,1,242,8,18,0,0,237,8,8,18,0,
3,239,8,18,0,1,241,8,18,0,0,244
1370 DATA 18,0,4,255,255,8,8,10,255,255
1380 DATA 18,0,11,250,8,18,0,12,251,8,18,0,0,252
1390 DATA 67,72,79,67,75,89,32,69,71,71
1400 DATA 18,0,5,232,18,0,5,236
1410 DATA 18,0,1,245,8,18,0,3,246
1420
1430 DEF PROCmoveworm
1440 MOVE owx%,owy% : GCOL 0,6 : VDU 255
1450 IF wy% = 0 PROCprintrocks
1460 MOVE wx%,wy% : PRINT worm$(flag%)
1470 flag% = (flag%+1) MOD 2
1480 owx% = wx% : owy% = wy%
1490 IF wy%>=504 THEN PROCfood : PROCreset ELSE wy% =
wy%+12
1500 IF RND(2) = 1wx% = wx%+16 ELSE IF RND(2) = 2wx% =
 wx%-16
1510 IF wx%<16wx% = 16 ELSE IF wx%>rm%-16wx% = rm%-16
1520 IF wy%>200 IF FNrock PROCshoot
1530 ENDPROC
```

```
1540
1550 DEF FNrock
1560 flr% = 0
1570 FOR co% = 0 TO ro%
1580 IF ABS(wx%-RX%(co%))<48 AND ABS(wy%-RY%(co%))<16
THEN flr% = -1
1590 NEXT
1600 = flr%
1610
1620 DEF PROCshoot
1630 GCOL 0,1 : MOVE wx%+32,wy%
1640 PLOT 29,wx%+32,504
1650 SOUND 0,4,4,3
1660 PROCdelay(.5)
```

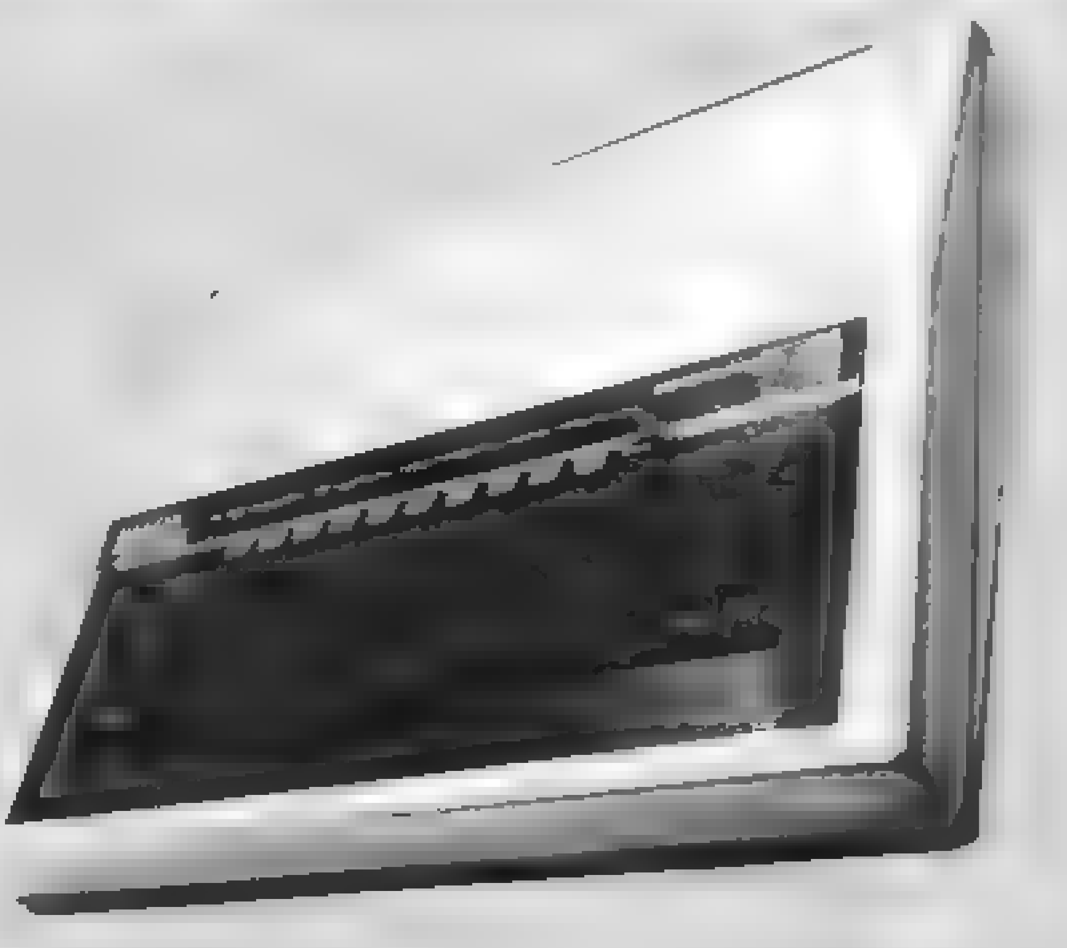
```
1670 GCOL 0,6
1680 MOVE wx%+32,wy%
1690 PLOT 29,wx%+32,504
1700 IF (wx% DIV 32)-1 = X% DIV 32 THEN PROCdead
1710 PROCreset
1720 ENDPROC
1730
1740 DEF PROCdelay(t)
1750 co% = TIME : REPEAT UNTIL TIME -co%>t*100
1760 ENDPROC
1770
1780 DEF PROCreset
1790 wy% = 0
1800 wx% = RND(23)*32
1810 ENDPROC
[illegible]
1830 DEF PROCprintrocks
1840 FOR co% = 0 TO ro%
1850 MOVE RX%(co%),RY%(co%)
1860 PRINT rock$
1870 NEXT
1880 ENDPROC
1890
1900 DEF PROCdead
1910 VDU 19,6,14,0,0,0,19,4,11,0,0,0
1920 FOR co% = 1 TO 45
1930 MOVE X%+64,504
1940 GCOL 0,co%
1950 DRAW X%-200+ RND(400),Y%+ RND(400)
1960 SOUND 1,1,co%,2
1970 NEXT
1980 VDU 20
1990 *FX15,1
2000 wg% = -1
2010 ENDPROC
2020
2030 DEF PROCpeck
2040 MOVE X%,Y% : PRINT wipe$
2050 MOVE X%,Y% : PRINT hen2$
2060 SOUND 0,-15,6,2
2070 MOVE X%,Y% : PRINT wipe$
2080 MOVE X%,Y% : PRINT hen1$
2090 ENDPROC
2100
2110 DEF PROCfood
2120 *FX15,0
2130 IF ABS((X%-16)-wx%)<=16 AND INKEY-74 THEN tec% =
tec%+1 : S% = S%+1 : SOUND 1,3,200,5
2140 wg% = wg%-1
2150 PROCscores
2160 IF tec% = 5 wg% = -1 : lives% = lives%+2 : PROCeg
g : IF lives%>6 lives% = 6
2170 ENDPROC
2180
2190 DEF PROCscores
2200 VDU 4,28,15,30,19,10
2210 COLOUR 6 : COLOUR 134 : PRINT TAB(3,4) SPC 2; TAB
(3,10) SPC 2
2220 COLOUR 0 : PRINT TAB(0,0)"Worms"; TAB(0,1);"Eaten
"; TAB(2,2) STR$(sc%+tec%); TAB(0,5)"Worms"; TAB(0,6);"
Left"; TAB(2,7) STR$(wg%);" "; TAB(0,9)"Score"; TAB(2,1
0);S% : VDU 26,3
2230 ENDPROC
2240
2250 DEF PROCinit1
2260 rm% = 784 : ro% = RND(2)+1 : DIM RX%(ro%),RY%(ro%
),worm$(1) : FOR co% = 0 TO ro% : RX%(co%) = RND(850) :
 RY%(co%) = RND(200)+200 : NEXT : flag% = 0 : sc% = 0 :
 lives% = 3 : S% = 0
2270 ENDPROC
2280
2290 DEF PROCinit2
2300 X% = rm% : Y% = 572 : ox% = X% : wx% = 640 : wy%
= 0 : owx% = wx% : owy% = wy% : wg% = 10 : tec% = 0
2310 ENDPROC
2320
2330 DEF PROCegg
2340 VDU 26
```



```
 2350 MOVE X%+112,540 : PRINT egg$
 2360 PROCdelay(3)
 2370 GCOL 0,132 : CLG
 2380 PROCtitle(300,984)
 2390 FOR N% = 896 TO 32 STEP -64
 2400 FOR M% = 0 TO 1216 STEP 128
 2410 col% = RND(15) : col2% = col%+5 MOD 15
 2420 SOUND 1,2,col%*10,1
 2430 MOVE M%,N% : VDU 18,0,col%,245,8,18,0,col2%,246
 2440 NEXT ,
 2450 VDU 4
 2460 COLOUR 0 : COLOUR 135
 2470 PRINT TAB(2,15) SPC 16; TAB(2,16)" ! EGG-CELLENT
 !"; TAB(2,17) SPC 16
 2480 VDU 5
 2490 PROCdelay(5)
 2500 ENDPROC
 2510
 2520 DEF PROCend
 2530 GCOL 0,132
 2540 CLG
 2550 PROCtitle(300,1000)
 2560 PROCtitle(300,100)
 2570 VDU 4
 2580 COLOUR 3 : COLOUR 132
 2590 PRINT TAB(3,10)"Don t feel too"; TAB(4,12)"Henpec
ked !!"; TAB(1,15)"Your score was :";S%; TAB(3,20)"Pres
s any key"; TAB(3,22)"to try again"
 2600 *FX15,0
 2610 co% = GET
 2620 RUN
 2630 ENDPROC
>
```

```
   10 REM ...Alien Fallout V2...
   20 REM ..By  Shingo Sugiura .
   30 REM
   40
   50 PROCdefine
   60 MODE7
   70 PROCinst
   80 PAGE=&1900:CHAIN"FALLOUT"
   90
  100 DEFPROCinst
  110 PRINTCHR$129CHR$157CHR$141CHR$131TAB(13)"Alien Fa
llout"
  120 PRINTCHR$129CHR$157CHR$141CHR$131TAB(13)"Alien Fa
l,out"
  130 PRINT'CHR$134TAB(11)"By Shingo Sugiura"
  140 PRINT'CHR$141CHR$130TAB(13)"INSTRUCTIONS"
  150 PRINTCHR$141CHR$130TAB(13)"INSTRUCTIONS"
  160 PRINT'SPC13"Z ... Left."
  170 PRINTSPC13"X ... Right."
  180 PRINTSPC9"SHIFT ... Fire."
  190 PRINTSPC13"Q ... Sound off."
  200 PRINTSPC13"S ... Sound on."
  210 IF PAGE<>&1900 THEN PROCtape ELSE PROCdisc
  220 ENDPROC
  230 DEFPROCtape
  240 PRINTTAB(0,23)CHR$134CHR$136"Please leave tape re
corder running."
  250 VDU28,10,20,30,17
  260 ENDPROC
  270 DEFPROCdisc
  280 PRINTTAB(3,20)CHR$134CHR$136"Press the SPACE BAR
to continue.";
  290 REPEAT UNTIL GET=32
  300 ENDPROC
  310 DEFPROCdefine
  320 VDU23,224,66,36,60,126,90,126,102,165,17,6
  330 VDU23,225,24,24,24,189,189,255,255,153
  340 VDU23,226,24,48,24,48,24,48,24,48
  350 VDU23,227,&7C,&44,&44,&FE,&E2,&E2,&E2,&00
  360 VDU23,228,&80,&80,&80,&E0,&E0,&E0,&FE,&00
  370 VDU23,229,&10,&10,&10,&1C,&1C,&1C,&1C,&00
  380 VDU23,230,&FE,&82,&80,&FC,&E0,&E2,&FE,&00
  390 VDU23,231,&FE,&82,&82,&E2,&E2,&E2,&E2,&00
  400 VDU23,232,&FE,&80,&80,&FC,&E0,&E0,&E0,&00
  410 VDU23,233,&FE,&8E,&8E,&8E,&82,&82,&FE,&00
  420 VDU23,234,&82,&82,&82,&E2,&E2,&E2,&FE,&00
  430 VDU23,235,&FE,&10,&10,&1C,&1C,&1C,&1C,&00
  440 VDU23,236,238,136,136,232,40,40,238,0
  450 VDU23,237,238,170,170,175,169,169,233,0
  460 VDU23,238,112,64,66,112,66,64,112,0
  470 VDU23,239,231,164,164,247,148,148,151,0
  480 VDU23,240,119,69,69,117,69,69,117,0
  490 VDU23,241,0,85,255,255,255,255,255,255
  500 ENVELOPE2,4,0,0,0,1,1,1,126,-4,-1,-4,126,80
  510 ENVELOPE1,2,-2,-2,-1,10,10,50,126,-4,-4,-4,126,0
  520 ENDPROC
```

```
   10PROCinit:PROCass
   20MODE7:PROCinst
   30MODE2
   40REPEAT
   50MODE2:VDU23;10,32;0;0;0;
   60height%=2:score%=0:screen%=0
   70REPEAT
   80PROCscreen
   90PROCmain
  100UNTIL landed
  110PROCdeath
  120PROCwait(8000):*FX15
  130MODE7
  140PROCtable
  150UNTIL FALSE
  160END
  170DEFPROCmain
  180death%=0:landed=FALSE:fired=FALSE
  190c%=1 REPEAT
  200IF INKEY(-17) THEN *FX210,1
  210IF INKEY(-82) THEN *FX210
  220IF INKEY(-98) x%=x%+(x%>0)
  230IF INKEY(-67) x%=x%-(x%<17)
  240IF INKEY(-1)ANDfired=FALSE PROCfire
  250VDU17,1,31,x%,30:PRINTship$;
  260IF fired PROCmissile
  270IF al(c%)<>0 AND RND(1)>.3 PROCdescend
  280IF al(c%)>28 landed=TRUE
  290c%=c%+1:IF c%>18 c%=1
  300VDU17,7,17,132,31,0,2:PRINT;score%:COLOUR128
  310UNTIL landed OR death%=18
  320ENDPROC
  330DEFPROCdeath:RESTORE
  340FOR music=1 TO 13
  350READ A,B,C
  360SOUND1,A,B,C:SOUND2,A,B+48,C
  370NEXT
  380ENDPROC
  390DATA2,21,15,0,0,1,2,21,13,0,0,1
  400DATA2,21,13,0,0,1,2,21,15,2,5,10
  410DATA2,33,7,2,21,15,2,5,10,2,33,7,2,21,15
  420DEFPROCdescend
  430VDU17,2,31,c%,al(c%),32
  440al(c%)=al(c%)+1:VDU31,c%,al(c%),224
  450ENDPROC
  460DEFPROCfire
  470bx%=x%+1 by%=30
  480SOUND1,1,100,1
  490fired=TRUE
  500ENDPROC
  510DEFPROCmissile
  520VDU31,bx%,by%,32
  530by%=by%-1
  540IF by%<3 fired=FALSE:ENDPROC
  550VDU31,bx%,by% CALLcode
  560VDU17,3,226
  570IF ?&70<>32 THEN PROChit
  580ENDPROC
  590DEFPROChit
  600score%=score%+10
  610SOUND0,2,100,1
  620fired=FALSE
  630al(bx%)=0
  640VDU31,bx%,by%,32
  650death%=death%+1
  660ENDPROC
  670DEFPROCinit:*T.
  680ship$=" "+CHR$225+" "
  690DIMal(18),sc(8):names=&F00
  700FOR A=0 TO 7
  710$(names+A*15)="Shingo soft":sc(A)=500-A*50
  720NEXT
  730ENDPROC
  740DEFPROCscreen:CLS
  750height%=height%+2:screen%=screen%+1:x%=10
  760IF height%>10 height%=12
  770VDU28,0,2,19,0,17,132,12,26,17,6
  780VDU31,4,0,227,228,229,230,231,32,232,227,228,228,2
33,234,235
  790VDU17,5,31,0,1,236,237,238,17,7:PRINTTAB(0,2);scor
e%
  800VDU17,5,31,15,1,236,239,240,31,15,2,17,7 PRINT;scr
een%:COLOUR128
  810COLOUR2
  820FOR A=0 TO 18
  830VDU31,A,31,241
  840NEXT
  850FOR A=1 TO 18
  860ay%=RND(height%)+height%:al(A)=ay%
  870VDU31,A,ay%,224
  880NEXTA
  890VDU17,1,31,x%,30:PRINTship$
  900ENDPROC
  910DEFPROCtable
  920PROCammend CLS
  930PRINTCHR$129CHR$157CHR$130CHR$141TAB(5)"ALIEN FALL
OUT HALL OF FAME"
  940PRINTCHR$129CHR$157CHR$130CHR$141TAB(5)"ALIEN FALL
OUT HALL OF FAME"'
  950PRINTTAB(10)CHR$134CHR$141"Today's Greatest"
  960PRINTTAB(10)CHR$134CHR$141"Today's Greatest"'
  970FOR I=0 TO 7
  980VDUI+49,46 PRINTTAB(6),sc(I),TAB(12)"...   ";$(nam
es+I*15)'
  990NEXTI
 1000PRINTTAB(2,23)CHR$134CHR$136"Press the SPACE BAR t
o replay.";
 1010REPEAT
 1020REPEAT
 1030A=GET
 1040UNTIL A=32 OR A=81 OR A=83
 1050IF A=81 THEN *FX210,1
 1060IF A=83 THEN *FX210
 1070UNTIL A=32
 1080ENDPROC
 1090DEFPROCammend
 1100IF score%<=sc(7) ENDPROC
 1110FOR I=7 TO 0 STEP-1
 1120IF score%>sc(I) sc(I+1)=sc(I):$(names+(I+1)*15)=$(
names+I*15):fix=I
 1130NEXT
 1140sc(fix)=score%
 1150PRINTTAB(6,2)CHR$134CHR$141"Congratulations! "
 1160PRINTTAB(6,3)CHR$134CHR$141"Congratulations!!"
 1170PRINTTAB(6,8)CHR$129"Your score of ";score%
 1180PRINTTAB(0,10)CHR$129"qualifies for the Hall of Fa
me."
 1190PRINTTAB(4,13)CHR$131"Please enter your name."
 1200VDU31,5,15,134,157,129,31,26,15,156,31,9,15:*FX15
 1210!&1000=names+fix*15 ?&1002=14 ?&1003=32:?&1004=127
 1220X%=0:Y%=&10:A%=0:CALL&FFF1
 1230ENDPROC
 1240DEFPROCass:osbyte=&FFF4
 1250FOR pass=0 TO 2 STEP2:P%=&E00
 1260[OPT pass
 1270.code
 1280LDA#135:JSR osbyte
 1290STX&70
 1300RTS
 1310]NEXT pass
 1320ENDPROC
 1330DEFPROCwait(T)
 1340FOR delay%=0 TO T
 1350NEXT delay%
 1360ENDPROC
 1370DEFPROCinst
 1380PRINTCHR$129CHR$157CHR$141CHR$131TAB(13)"Alien Fal
lout"
 1390PRINTCHR$129CHR$157CHR$141CHR$131TAB(13)"Alien Fal
lout"
 1400PRINT'CHR$133TAB(11)"By Shingo Sugiura"
 1410PRINT''"    You are the sole defender of the"
 1420PRINT"planet GORGON. All the others have been"
 1430PRINT"destroyed in previous attacks by the"
 1440PRINT"aliens. They attack in strict formation"
 1450PRINT"so shooting them is easy, it's a matter"
 1460PRINT"of shooting them all..."
 1470PRINT''"  You must defend your home planet as"
 1480PRINT"long as possible. The last few"
 1490PRINT"survivors depend on you."
 1500PRINTTAB(3,23)CHR$134CHR$136"Press the SPACE BAR t
o play.";
 1510REPEAT UNTIL GET=32
 1520ENDPROC
```



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Game for some fun?

New games for the BBC, Sord M5 and TI-99/4A are given the once-over by our review panel

Jogging/ Sidewinder Sord M5 £8.95

Computer Games, Goldings Hill, Loughton, Essex IG10 2RR

In the first game you control John, who goes jogging every morning. He wants to win the big race next week. A rival, however, is trying to interfere. He digs holes in the road, drops apples in his path, and uncages a very unfriendly crow

You will be pleasantly surprised when you run this game. John is a brightly coloured, well-defined character and as he waves his arms and legs, background scrolls to give the impression of movement. You can make him run, stop and, somehow, go up and down!

In Sidewinder, half of the screen is the sky and bottom half is the instrument panel. The sky has dozens of dots — enemy helicopters, jet planes, prop planes. You have to destroy as many of them as you can using your sidewinder missiles before your fuel runs out. Of course, before this happens you must land

Although both these are written in BASIC, they feature good graphics and sound. They're obviously not as sophisticated as cartridge games, but represent good value for money. **S.S.**

instructions	100%
playability	70%
graphics	70%
value for money	80%

★-★-★-★

Ghouls 32K BBC £7.95

Micro Power, 8/8a Regent St, Chapel Allerton, Leeds LS7 4PE

Another high standard Program Power game Cassette presentation is very good and instructions are quite adequate As the game loads we can hear spooky music and the screen display changes colour, making the long loading much more interesting

Starting at the bottom, the idea is to reach the top and enter the next room of the creepy mansion During your trip you have to eat titbits to gain extra points, avoid poison smeared spikes and bouncing spiders Your journey is made more difficult by moving platforms contracting floorboards and powerful springs. If you think that sounds easy, there's a time limit and, if you fail to reach the top, you shrivel up into a little pile

Graphics are very good indeed. The slightest things have been thought of When you die, the ghost who chases you around the screen smiles Four levels have to be accomplished before you gain an extra life The first three are deadly, but the fourth... who knows?

Addictive and exciting. An interesting feature is that when you lose a life the screen moves away sideways and reappears in a spin to the centre **D.B.**

instructions	85%
playability	90%
graphics	95%
value for money	90%

★-★-★-★-★

Jet Power Jack 32K BBC £7.95

Micro Power, 8/8a Regent S., Chapel Allerton, Leeds LS7 4PE

Jack has been captured by the evil warlord Nogrob You have to collect fuel pods from one side of the garage and return to the other side to refuel the waiting starship Just to add excitement, Jack has to avoid nasty space Googlies and finally, yes, you ve guessed, prepare youself, it's... Wilfred the hideous Yugg monster To add to this impossible task, the sides of each ledge are live. Touching them will cause Jack to plummet to his death

Is this game difficult? You're not kidding. After plenty of practice I finally got the hang of moving Jack around. Now, I'm starting to play the game. If you like challenges you'll like this Presentation is of the high standard we have come to expect from Program Power. However, you must prepare yourself for the pictures of the terrible alien creatures, such as Wilfred

This game takes a lot of getting used to, but it's worth the trouble. Possibly not very original, I think new ideas are getting few and far between Still, I'm not trying to put anyone off. **D.B.**

instructions	90%
playability	85%
graphics	90%
value for money	95%

★-★-★-★-★

3-D Stalkers TI-99/4A £5

Stainless, 10 Alstone Rd, Stockport, Cheshire

An interesting tactical game which requires two players. You are both trapped in a symetrical maze from which only one of you may escape The object is to pursue and kill your opponent before he finds and eliminates you

The screen shows an overhead view of the maze and 3D perspectives of what is directly ahead of each player, updated after each move. Your position in the maze is not shown, but may be displayed at any time if requested. Obviously this option should not be used arbitrarily. Confirmation of your whereabouts is not only critical to you, but of certain interest to your opponent

The length and difficulty of each game is determined by the number of shots that are required to kill your opponent, requested before each game starts. Movement, controlled by keyboard or joystick, is forward, or turn back, left or right

Not the sort of game I find particularly addictive, but at least it does make a change to pitch your wits against an equally fallable human opponent S and who knows, will you be the hunter or the hunted? **J.W**

instructions	90%
playability	60%
graphics	50%
value for money	85%

★-★-★-★

Raging River/ Super Jackpot TI-99/4A £6

Pete Williams, from Stainless, 10 Alstone Rd, Stockport, Cheshire

The first is actually called The Raging Amazon, and one wonders why the author gave it two titles. It is of the ski-run type you must guide your canoe through a vertically moving panorama Graphics are very good, and good use has been made of colour Hazards include fallen trees lying half-submerged, rocks and man-eating alligators (who also have a penchant for canoes it seems) You can speed up or slow down the movement by controlling the rate at which the panorama moves past you There are occasionally delays while a melody is played — at the beginning and whenever you fall foul of a hazard The cassette label claims that you should aim to travel 82 miles — it can be done, it says — but I found that frequently the river was blocked completely by more than one hazard and it was quite an effort to travel just a few miles The second is yet another in the fruit machine mould and, although the graphics are excellent and every effort has been made to overcome the slowness of TI BASIC in the end it is just as boring as all the others on the market **P.B.**

instructions	80%
playability	75%
graphics	90%
value for money	65%

★-★-★

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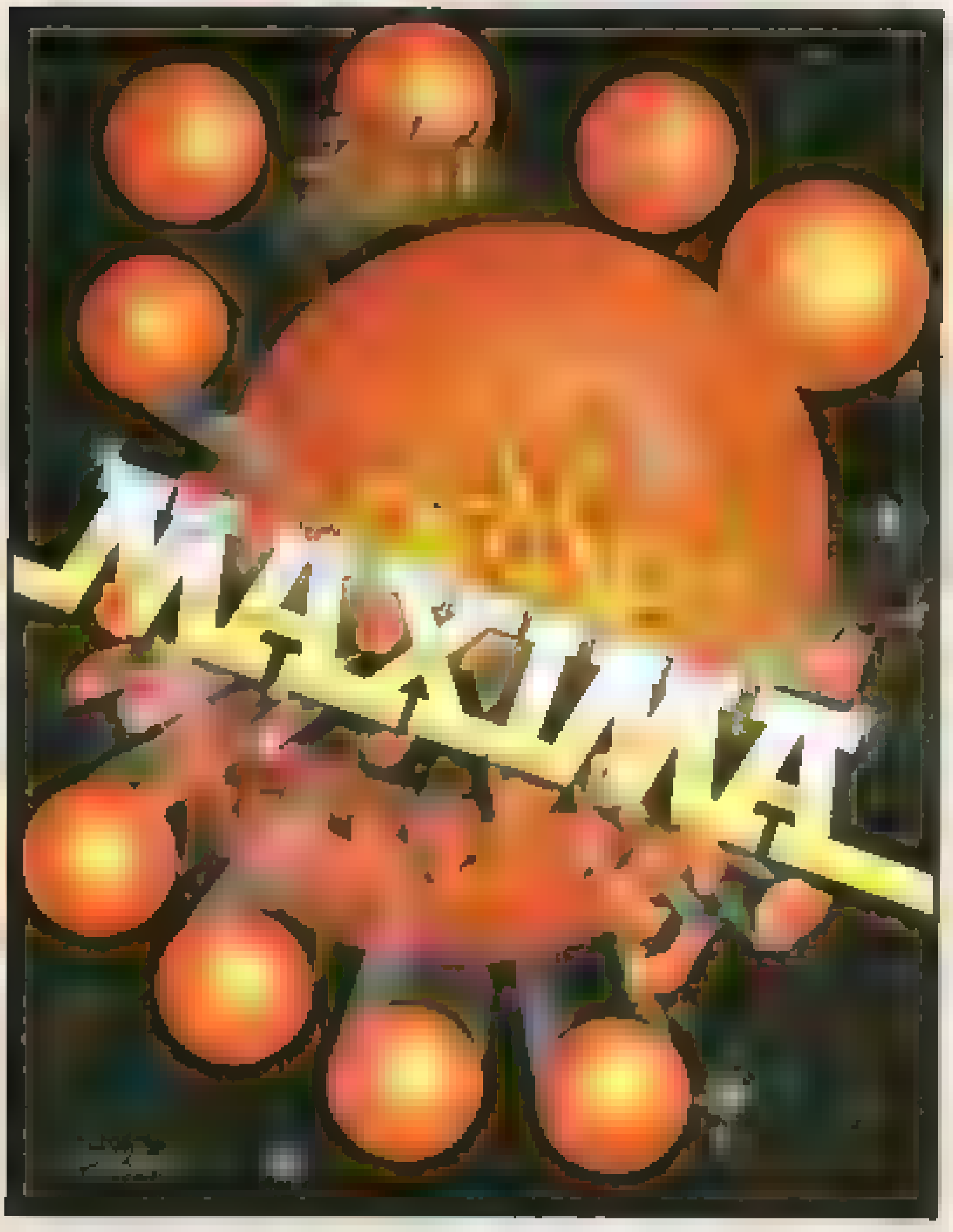
MAXIMA is certain to become a best seller for the Memotech. It is a graphically superb game that has you zapping 16 different varieties of aliens, each with its own formation and attacking patterns.



The game opens with your ship executing an impressive jump through hyper-space to where the action is. First up are the green snappers - easy targets against the starry backdrop. Next comes the blue meanies, a swirling bunch of wriggling invaders. To follow, a crescent of rather beautiful revolving hexagonal barrels who arc around the screen raining bombs on you. Its a shame to pot these lovely creatures. On you go to a further 13 screens of magnificent graphics.

Devestatingly simple in concept it nevertheless has that indefinable ability to compel you to have just one more attempt to try and see what the 16 screens hold in store.

A must for all Memotech owners.

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Stonkers' soldiers need to eat

I am writing because I am afraid Spectrum owners may be wrongly put off by the review of Imagine's Stonkers HCW 50) by D C I'm aware that your reviews are only a personal view of programs but I feel I must correct some of the criticisms made.

Firstly, the alleged "black marketeering" by the supply units this occurs because the supply trucks follow the exact route indicated by your cursor and should it meet one of your combat units along the line it will supply them, whether or not it was what you actually intended Therefore the answer to supplying a particular unit is to make sure your truck will meet no other combat units before it reaches the correct one

Secondiy, the reason his infantry were dying miles from the enemy was probably because he forgot to keep them properly supplied with food from his supply ship — computerised soldiers have to eat as well, you know!

As for the tendency to crash during play Imagine has admitted this is a bug and offer to replace any faulty copies with corrected, later editions

Howard Davies, Stoke, Coventry.

Two notes from Pan

- Pan Books has asked us to point out that, as mentioned in a footnote to a letter in HCW 53, its offer to replace books with faulty listings applies only to two titles, one for the VIC 20 and the other for the Commodore 64 The remainder of the series, for other computers, does not contain the errors

For those who may not have seen the footnote, Pan is offering a free copy of the reprint if you send a proof of purchase - like the title page — to Pan Books, 18 20 Cavaye Place, London EC4A 1AB Pan says the reprints will be despatched soon.

- Due to a typographical error, we printed an incorrect extract from Ellis Horwood's book, Winning Games on the VIC-20.

This is the correct version: '

If you have a 16K RAM pack, the following commands entered in direct mode immediately after power up will set up the VIC to RUN a program designed for a VIC or a VIC plus 3K:

```
POKE8192,0:POKE44,32:
   NEW
POKE36866,150 POKE
   36869,240 POKE648,30
```

Clear the screen and you are almost ready to go, only one last hurdle remains The program which you want to run may have a line like this in it:

```
POKE56,28 POKE52,28:
   CLR
```

This line is used to lower the top of memory to protect some area of RAM from being overwritten

With a 16K RAM pack, if you have used the above POKEs, you don't need to lower the top of memory — so delete the line from the program. Otherwise you will get an OUT OF MEMORY error as soon as you try to RUN

Home Computing Weekly

[illegible] down under

I decided to write to you after seeing the One Man's View in HCW 38 from a software house which is having trouble with distributors.

I am having similar problems out here My wife and I started a small mail order software business, selling mainly through user group magazines.

We started it because when we purchased our Atari 400 we were amazed at the difference in the price of software in the U.K. and out here. It's not so much the programs by Atari — they are about the same prices — but third party software and programs for the Spectrum, BBC, Commodore 64 and VIC-20.

A few examples The Hobbit, for the Spectrum, BBC and CBM 64, is £14 95 in the U.K. and here the price is A$39 95 plus A$2 50 postage, which is equivalent to £28 12. Mad Martha, for the Spectrum, is £6 95 in the U K and the equivalent of £21.50 here. As you can see, quite a difference in prices.

By the way, the 48K Spectrum sells here for $399 — that's $264 — the BBC model B is $1,650 (U K £1,093). If you write to Sinclair U K you are told to buy through the distributors out here

I know that these firms have overheads and have to honour warranties and so forth, but as import duty and sales tax total 30.2 per cent on the wholesale price it still seems wrong to me.

The stupid part about all this is that most state education departments recommend the BBC for schools, so there is a ready made user base But at those prices the kids' parents will probably settle for some cheap and nasty machine The same applies to software — if the price was reasonable they could buy more

Which brings me back to my problem I wrote to a few of the software houses in the U K about supplies Only a couple bothered to reply The main gist was that they were already, or were about to, supply such-and-such a distributor in Australia, thank you very much!

At one stage I was buying direct from the U K at the price as advertised in your magazine, paying 30 2 per cent import duty and sales tax here, and still selling cheaper and making a few dollars.

I would appreciate it if you could print this letter in your magazine and, if any software house with programs for Atari 400 800, BBC, Spectrum or CBM 64 would like to contact me maybe we could do business.

At this stage I look after the mail order side of things at night as I work in an aluminium smelter during the day We don't want to become millionaires overnight (too many hassles), just to give people a good deal and make a bit of profit

M C Adams, Elspedito Software, Frankford Highway, Glengarry 7251, Tasmania, Australia

[illegible]

I'm replying to Mr M Logan (HCW 53) who had a few problems with The Castle, the excellent game from Bug Byte His problems were getting out of the maze and getting by the werewolf.

Both problems are relatively simple to solve. The simplest way to get out of the maze is to enter PRAY. This transports you out of the maze and into the room containing the hovering buzzards and the chasm.

Secondly, to get past the werewolf enter SHOW CROSS. This scares the werewolf and allows you to enter any direction except west. The werewolf is of the vampire family and crosses scare off vampires. It's obvious!

Another clue to the game is SMHA CLYF. And if you want to know your score at any time type SCO.

I hope these hints help Mr Logan and other people

M. Lewis, Mansfield, Notts

Say who you are

I advertised some software in the classified section of HCW 51 and was most pleased with the response

Unfortunately, in his/her eagerness to snap up the bargain of a lifetime someone sent a postal order and no return address or even a name Under the circumstances, there is little I can do except await an irate letter.

Perhaps you could publish this letter as a warning to any prospective purchasers of mail order items And it may explain why one of your readers is still waiting for a tape

Mark Griffiths, 8 Moss Close, Warks CV22 6SD

Revised flight plan

Since your five star review of Battle Flight, for the Oric, in HCW 45 we have taken your criticisms to heart and have tried to do something about them.

the package now comes with three sheets of instructions containing illustrations, with some of the pilot jargon removed. The "two crosses" representation of the aircraft has been replaced by user defined aircraft character graphics, as suggested by your reviewer, and the instrumentation display has been made more self explanatory

In addition the take-off and touch-down sequence has been redesigned to give an even better flying atmosphere and also makes for easier landings (we hope) We have retained the "old control layout" for reasons described in the instructions and because we believe if used as described control soon becomes quite easy without the need to take one's eyes away from the screen.

Finally we would endorse M R 's statement in the review, that the program is "... too complicated for younger children " We make no apology for this since the program was specifically aimed at the more mature aviation enthusiast with maybe a little knowledge of what real flying is all about

J.J. Braithwaite, Stour Computing, 16 Old Bridge Road, Bournemouth BH6 5RG

Oric praise

Thank you for publishing my recent letter regarding the problems with my Oric I have since been contacted by Oric and they have very kindly sent me a new Oric Atmos computer

Through your pages I would like to express my gratitude to Oric's managing director, Mr Peter Harding, and especially his assistant, Miss M Bell, who arranged for the Oric to be exchanged and has restored my faith in Oric Products International

Bill Bailey, Hatfield, Herts

Move ladder

Having typed in Climber, by Alan Jarvis (HCW 51), we found that on screen five you could only get two flags. This is because of a misplaced ladder To rectify this line 3005 must be changed to

```
3005 DATA 10, 11, 4, 4, 4,
   13, 3, 12, 13, 3, 8, 19, 3,
   4, 2, 7, 8, 21, 3, 4, 23, 7,
   5, 30, 14, 4, 11, 5,
```

We think that Climber is the best game you have published for the Spectrum

Anthony and Michael Ventre, St Helens, Merseyside

Send your letters to Letters, Home Computing Weekly, No.1 Golden Square, London W1R 3AB. Don't forget to name your computer — the best letter could win £5-worth of software. Got a problem with your micro? We'll soon be starting a queries page, so send your technical questions to Queries at the above address.

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"....an addictive game...the Graphics are very good indeed ...there's also a lot of very good programming." Personal Computer News, Dec22-Jan 4 1984.

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ACL Division, Express Marketing, 73 Watery Lane, Bordesley, Birmingham

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Will this program be more successful than a book? I feel it could have made better use of the graphics and sound facilities that a 48K Spectrum offers, and not relied upon putting information across by using masses of words printed on screen using ordinary Sinclair type.

With the many aids now available to programmers larger type, fewer words and more diagrams are possible. The offered game of Space Invaders gives no chance for a second go, and answers are not put into blanks in exercises

And why must programmers imagine that educational programs need correct answers entered before the next question can be asked? I liked the basic idea and use of the space bar to move to the next screen. **T.W.**

instructions	80%
playability	75%
graphics	50%
value for money	60%

★★★

Lasermaths 32K BBC £7.50

LVL, Electron House, Bridge St, Sandiacre, Nottingham

Alien spacecraft are invading your planet against your defence of three laser weapons The lasers can only be charged by answering mathematical problems correctly. Ten consecutive correct answers charge a laser sufficiently to enable an alien craft to be destroyed. Get one wrong, or take too long to answer, and you lose a laser

The Mode 7 Teletext display is neat and well presented, but I think the battle scene could be a little more imaginative. The use of sound as the laser is charging would also add a little more excitement for the six to 16 year old to whom the program is aimed

The options make this an extremely versatile program. The are 56 selectable grades with various combinations of addition, subtraction, multiplication and division Positive and negative numbers, the time allowed for answers, the largest number to be dealt with and the number of parts in the questions can also be selected. Difficulty level can be constant or increasing

Instructions are excellent For kids who have to suffer computer maths there should at least be some enjoyment in this approach. **D.H.**

instructions	90%
playability	85%
graphics	75%
value for money	[illegible]

★★★★

Geography Dragon 32 £8.75

Cable, PSL Marketing, [illegible] Limbury Rd, Luton LU3 2PL

This an educational program according to its producers and the subject is Geography I would beg to differ This is a database program with a few features which enable questions to be asked based on its contents

One of the well publicised features is the high resolution World Map which is quite nicely done but contains no real detail in terms of country boundaries and only very large features are labelled. There are other maps, but all are in low resolution and this leads to considerable distortion of detail. The question are all multiple choice and, as is usual with computer control of this type of question, some of the alternatives can be ridiculous There is also the facility to check the currency and capital of each country in the database but the search is frustratingly slow

The only feature I can fully recommend is the spelling check which means slight misspellings can be used and the information still found However, to call this package Geography is like calling Genesis the Bible It's a start but by no means worthy of the name **D.C.**

instructions	50%
ease of use	80%
graphics	65%
value for money	40%

★★

Money Spectrum 48K £6.95

Stell, 36 Limefield Av, Whalley, Lancs BB6 9RJ

A program designed to introduce young children to coins, various combinations of coins, notes, change and so one It's rather unfortunate the government has decided to ditch the p coin, because that's where the program starts

All the coins are represented graphically, and someone has worked very hard to create near likenesses But they are only near likenesses and not replicas. Whether a child will relate the screen picture to the real thing remains to be seen.

It's unlikely an unaided child would be able to read the screen and manipulate the numbers involved in changing two fivers for a 10, or four fives for 20, let alone calculating change As a result Mum or Dad should be standing by. This being so, they could do this with real money which would be a much better experience for the child

To be fair, the designers have tried to make the program as simple as they can, but then, money's complicated stuff! Buy this program if you have no idea how to teach your child and some help but do the teaching with the real thing, and lots of discussion **D.M.**

instructions	90%
playability	90%
graphics	80%
value for money	60%

★★★

Wordgame 32K BBC £5.45

Scientific, Old Loom House, Back Church Lane, London E1 1LS

A lot of work has gone into this A special Character set has been designed to give better formed letters with proper ascenders and descenders. The instructions are good; controls simple and fairly easy to use Unfortunately, the result is a rather slow and laborious exercise

There are four stages of question, each with five difficulty levels — though this I gathered from the printed instructions not the program In the first two you choose letters from those displayed to fill gaps; in the other two, you key in letters to make up a word It has a 1,000-word vocabulary However sometimes the choice throws up stupid questions — e g choose the missing letter in m*p from a or o. It could be either! This happened enough times to become annoying At one stage the word was "opp*sition" and there was only one letter offered. Then at stage three, it gives you one letter of a three-letter word and you guess the rest. Try "e**", with only four mistakes allowed. The answer was "eye". That sort of question can be bl**dy difficult! **B.J.**

instructions	80%
ease of use	50%
display	80%
value for money	70%

★★★

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48K SPECTRUM

BBC acorn electron

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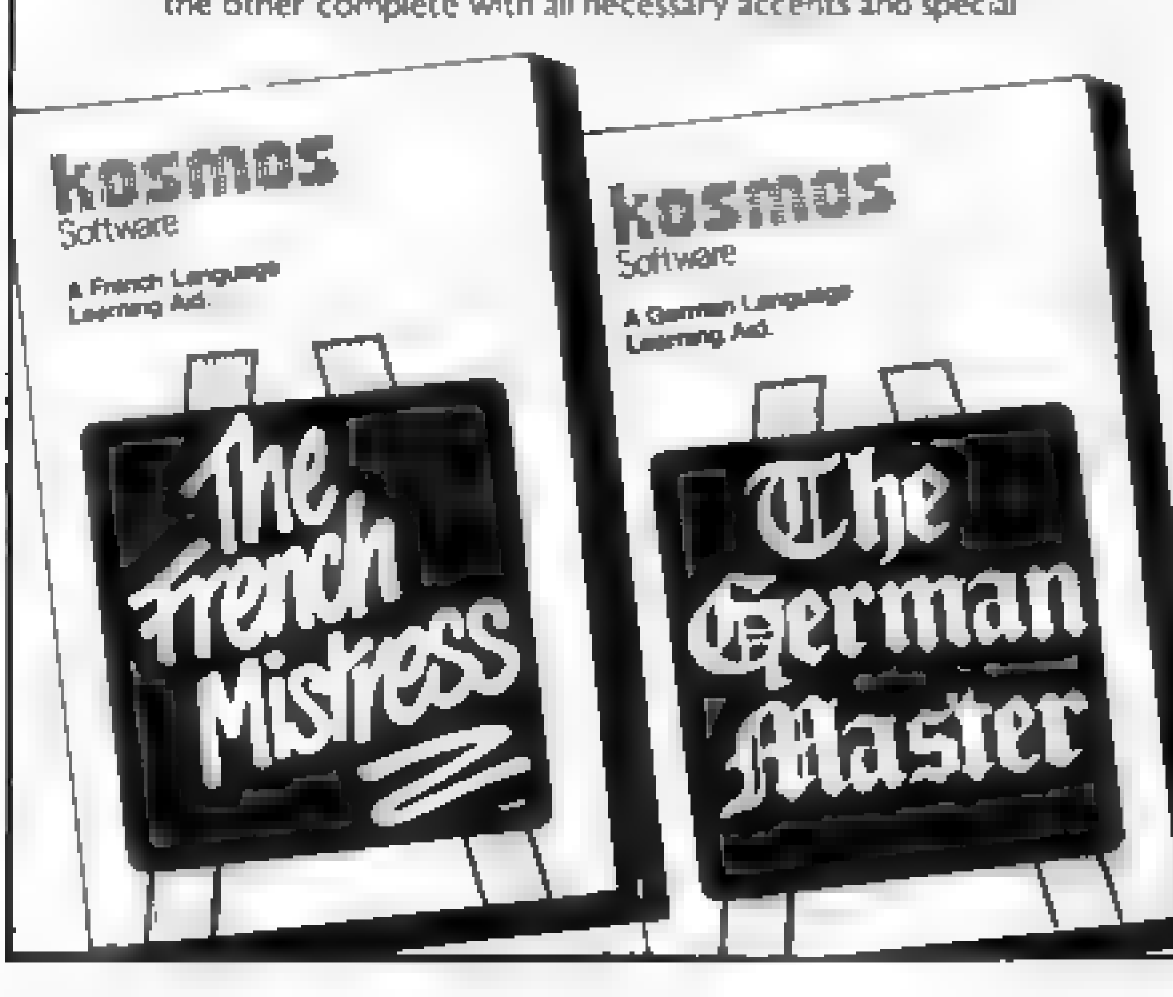

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Save your money — play this slot machine

Slot, P.H. Cooke's game for the 16K ZX81, simulates arcade machines in which coins bounce into pockets

This game simulates a slot machine in an amusement arcade where the coin bounces in a random manner into appropriate pockets.

The characters in reverse field are:

710 1 2 3 4 5 6 7
760 DUMMY YOU SCORED NIL
765 YOU NEED SOME PRACTICE
770 NOT BAD NOT BAD
775 VERY GOOD VERY GOOD
780 EXCELLENT EXCELLENT
785 CLEVER DICK CLEVER DICK
1030 1 2 3 4 5 6 7
1060 3 0 5 0 5 0 3

How it works

- **100-139** prints a rubout routine for the falling coin
- **290-359** allows for players' choice of which slot to use and prints it
- **560-689** randomly selects next position of falling coin
- **700** determines score
- **760-785** comments on your final score
- **799** alters top score if necessary
- **810-840** routine for another game
- **1000-1120** prints the slot machine

Variables

S the player's score
M the 16p score held in address 16514, which is POKEd with the new top score if necessary

```
   1 REM 4
  30 GOTO 1000
 100 PRINT AT Y,X," "
 105 LET Y=Y+1
 110 PRINT AT Y,X;"O"
 119 RETURN
 130 PRINT AT Y,X," "
 139 RETURN
 290 LET X=2
 299 RETURN
 300 LET X=4
 309 RETURN
 310 LET X=6
 319 RETURN
 320 LET X=8
 329 RETURN
 330 LET X=10
 339 RETURN
```

```
 340 LET X=12
 349 RETURN
 350 LET X=14
 359 RETURN
 451 LET S=0
 452 FOR J=1 TO 10
 460 PRINT AT 1,2;"CHOOSE A SLOT
"
 500 LET Y=4
 505 LET A=CODE INKEY$
 507 IF A<29 OR A>35 THEN GOTO 5
05
 509 PRINT AT 1,2;"
"
 510 PRINT AT 5,17;"COINS LEFT=
",10-J;" "
 518 GOSUB A*10
 520 PRINT AT 3,X;"O"
 530 PRINT AT 3,X;" ";AT 4,X;"O"
 550 GOSUB 100
 555 GOSUB 130
 560 FOR I=1 TO 6
 570 LET Z=RND
 580 IF Z>.5 AND X<14 THEN GOTO
610
 585 IF Z<.5 AND X<3 THEN GOTO 6
10
 590 LET X=X-(X>2)
 600 GOTO 620
 610 LET X=X+1
 620 LET Y=Y+1
 630 PRINT AT Y,X;"O"
 640 GOSUB 100
 650 GOSUB 130
 689 NEXT I
 690 PRINT AT Y+1,X;"O"
 692 FOR I=1 TO 60
 693 NEXT I
 695 PRINT AT Y+1,X;" "
 700 LET S=S+(3*(X=2))+(3*(X=14)
)+(5*(X=6))+(5*(X=10))
 705 PRINT AT 10,19,"SCORE= ",S
 710 PRINT AT 3,2,"1 2 3 4 5 6 7
"
 750 NEXT J
 760 IF S=0 THEN PRINT AT 19,19;
"DUMMY YOU";AT 21,19;"SCORED NIL
"
 765 IF S>0 AND S<10 THEN PRINT
AT 19,18,"YOU NEED SOME",AT 21,2
1,"PRACTICE"
 770 IF S>=10 AND S<20 THEN PRIN
T AT 19,20;"NOT BAD";AT 21,20;"N
OT BAD"
 775 IF S>=20 AND S<40 THEN PRIN
T AT 19,18;"VERY GOOD";AT 21,18;
"VERY GOOD"
 780 IF S>=40 AND S<50 THEN PRIN
T AT 19,19;"EXCELLENT";AT 21,19;
"EXCELLENT"
 785 IF S=50 THEN PRINT AT 19,19
,"CLEVER DICK",AT 21,19,"CLEVER
DICK"
 799 IF S>M THEN POKE 16514,S
 800 FOR I=1 TO 200
 805 NEXT I
 810 PRINT AT 19,17;" ANOTHER GA
ME ?";AT 21,17;"   (Y OR N)    "
 820 LET A=CODE INKEY$
 830 IF A=51 OR A=62 THEN GOTO 8
40
 835 GOTO 820
 840 IF A=51 THEN STOP
 850 CLS
1000 FOR I=3 TO 19
1010 PRINT AT I,1;"■";AT I,15;"■
"
1020 NEXT I
1026 PRINT AT 4,1;"■ ■ ■ ■ ■ ■ ■
■"
1030 PRINT AT 3,2;"1 2 3 4 5 6 7
"
1040 PRINT AT 17,3;"■ ■ ■ ■ ■ ■
"




1050 PRINT AT 18,3;"■ ■ ■ ■ ■ ■
"
1060 PRINT AT 19,2;"3 0 5 0 5 0
3"
1070 FOR I=6 TO 14 STEP 4
1080 PRINT AT I,2;"I I I I I I I
"
1090 NEXT I
1100 FOR I=8 TO 16 STEP 4
1110 PRINT AT I,3;"I I I I I I"
1120 NEXT I
1130 PRINT AT 5,17;"COINS LEFT=
";10
1140 PRINT AT 10,19;"SCORE= ";0
1150 LET M=PEEK 16514
1160 PRINT AT 14,18;"TOP SCORE T
O";AT 16,20;"DATE= ";M
1199 GOTO 450
1200 SAVE "SLOT"
1205 RUN
```

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Following the Thousand [illegible] the Alien Demolators the last remnants of the [illegible] are being transported across the galaxy in [illegible] suspension aboard the B.S. Quinn [illegible] we [illegible] bay and it is your job [illegible] ca [illegible] to defend Humanity [illegible] (popularly named [illegible] the [illegible]

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Play darts, programs after your

Super Darts
by
Mike Stranger

My 12-year old son Ian and I have produced an electronic version of darts for the 16K Spectrum. It was our first real attempt to make a program, but, if Ian's reaction and that of his friends is anything to go by, then you can take it that it's super entertainment.

It's a game for one or two players, and the starting score is a matter for the players to specify. The normal rules of darts apply, and the darts are supplied (electronically, of course) in sets of three.

To aim each dart, there is a small aiming circle at the top right-hand corner of the screen. A flashing dot can be moved by the cursor keys to the point where the player wants the dart to be aimed at.

When ready to "throw", you press zero, and a dart appears on the full-screen board, which is marked in the usual manner.

But, as nobody is a perfect darts thrower, there is no guarantee that the dart will hit the board exactly where you aimed it. How like real darts!

The score achieved by each dart is confirmed by the scoreboard, with appropriate accompanying beeps, and the total remaining reduced accordingly.

For two players, separate scoreboards are displayed to the left and right of the main board. As you would expect, anyone scoring the magic 180 with a set of three darts is rewarded by a suitably triumphant sequence of beeps!

How it works

9851-9859	set up menu
9860-9865	routine for dealing with LEFT$
9866-9892	routine for dealing with RIGHT$
9893-9906	routine for dealing with MID$
9907	exit and return to main listing

The rules of darts specify that, to finish, a player has to reach a zero total exactly, the final throw being either a double or a bull.

Super Darts is no exception — and the scoreboard will even tell you which double you need. If you go bust (exceed the required score to reach zero, or fail to do so with a ~~double~~, then the scores achieved by all the darts in that set of three will be ignored.

How does it work? The central concept is that of the aiming circle. The position of the flashing dot relative to the centre of the circle is first of all multiplied by a factor of three.

Before applying this to the full-screen board, a random variation is added to the calculations at this stage (nobody's a perfect darts player!) Then the dart is printed on the main board as a cross enclosed in circle (end-view, of course).

The position of the dart relative to the centre of the main board is now re-defined in terms of its distance from the centre and the angle from the

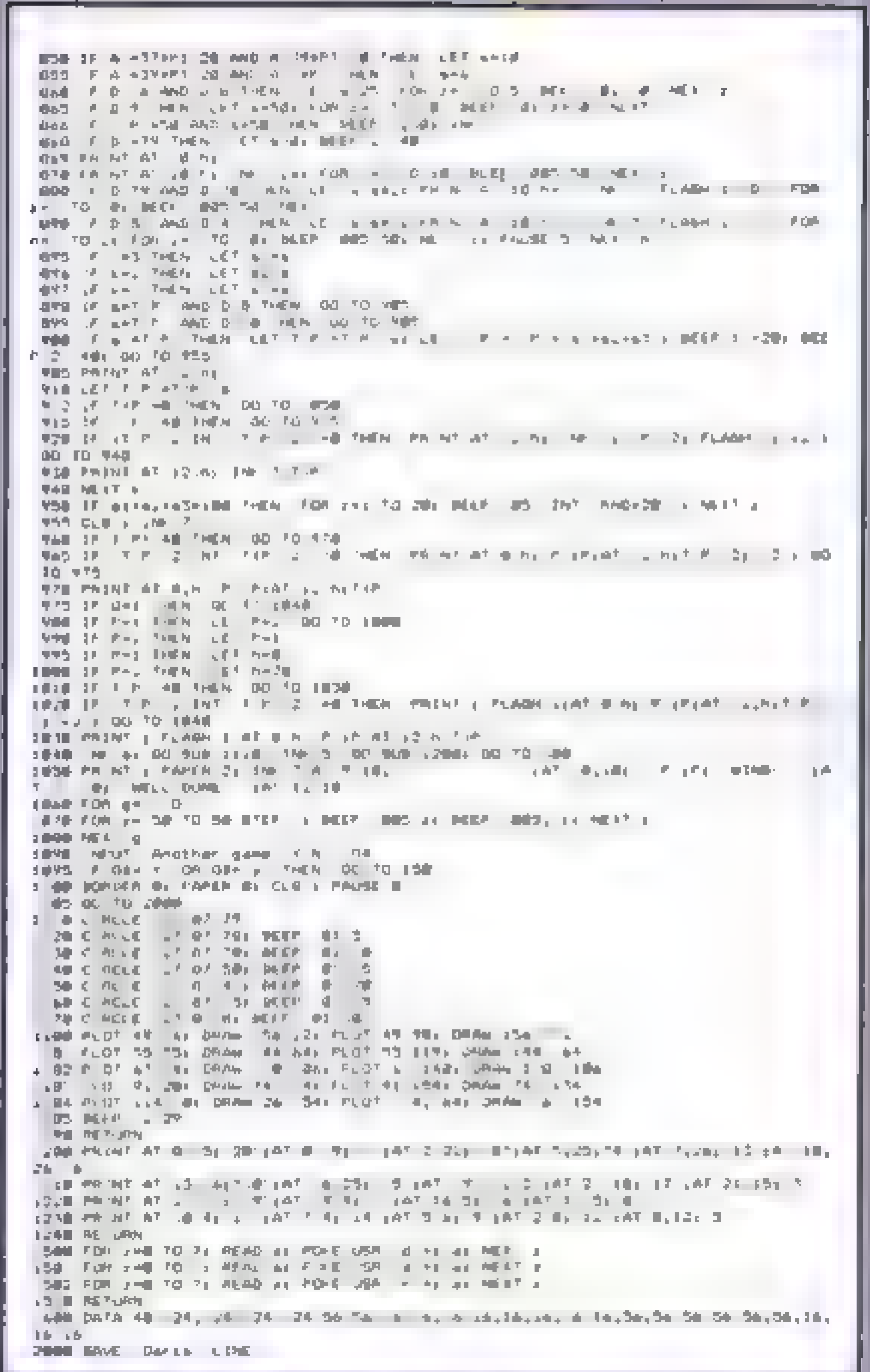
Listing 1 — Super Darts

How it works
subroutines

1010	validates entered run data, sets v$ to indicate validity or otherwise
1120	inserts automatic transactions
1500	adds a transaction
1800	converts numeric account to zero-filled right-aligned string
1900	receives main menu responses and transfers control to relevant routine
2100	adds a new account
2450	deletes an account
2840	receives account menu responses, transfers control to relevant routine
3100	adds a regular transaction
3700	deletes a regular transaction
4150	prints enquiry on regular transaction
4500	receives data for new transaction, stores it temporarily in b$ and calls 1500 to add it to database
5000	deletes a transaction
5500	prints enquiry on all accounts
6000	prints enquiry on transactions starting from an entered date for an account
6100	prints enquiry on all transactions held for an account
7000	quits program, option to save and verify
9000	validates entered amount, reformats it for printing and data storage, sets v$ to indicate validity or otherwise
9996	prints blanks on error line
9998	prints error message on error line

convert nd look money

Here's something for every Spectrum owner: a great darts game, help on converting programs from other computers and a household accounts program



three o'clock position

The angle enables the computer to decide in which scoring segment the dart is situated, and the distance enables it to decide whether it's a double, treble, outer or bull (or a miss, for that matter!)

Note: Capitals in PRINT statements should be entered in GRAPHICS mode.

Converting BASIC by R.A. Houlton

Sinclair BASIC uses a non-standard form of string slicing, as those who try to convert programs written for other computers know only too well.

This program takes the sweat, toil and tears out of conversion by allowing you to enter the form used in ordinary Microsoft BASIC and supplying you with the Sinclair equivalent.

The program allows you to input both numeric and alphabetic values for the variables associated with LEFT$, RIGHT$, and MID$ in any combination. The line numbering may at first seem peculiar, but in fact serves two purposes.

- It tucks the program into an area of line numbers which are not often used in programs and thus allows you to call on the routine while typing your main program by using the direct command GOTO 9851.

- For those who used my previous Dragon conversion it can be combined with that program by using the Spectrum's MERGE command.

The variables used have been kept to a minimum, Z, Z$, I, I$, J and J$, and are only used as local input variables. This means that you can use these variables in your main program.

The program may be left as part of the main program if there is no shortage of memory. It may be worthwhile adding line 9850 STOP as a precaution against the utility program becoming used in the main program.

If it is essential to remove lines 9851 to 9907 then an easy way to do it is to SAVE the conversion program, then prepare a dummy program consisting of the line numbers 9851 to 9907 each followed by a REM statement; SAVE this on the same tape and following the conversion program.

When you wish to remove the conversion program MERGE the dummy program which will overwrite the existing program. Enter LIST 9851 and push the BREAK key. Now, keeping the CAPS/SHIFT key depressed, press keys 1, 8, 0, ENTER in sequence and repeat until all lines have been removed. This way you do not have to think about which line number to enter next.

The program is, of course, specific to the Spectrum, but for those owners of other makes of computer who may wish to use the idea to operate in reverse the following information may be useful:

Sinclair Basic	Microsoft Basic
X$(1 TO A) or X$(TO A)	LEFT$(X$,A)
X$(A TO B)	MID$(X$,A,((B + 1) − A))
X$(A TO)	RIGHT$ (X$,((LEN X$ + 1) − A))

Accounts by Geoff Griffiths

My program will sort out your money for you. It will handle bank and investment accounts or particular categories of income and expenditure. And it can cater for up to nine accounts, each holding up to 50 transactions.

Up to nine monthly transactions — like standing orders — can be dealt with per account.

You enter a date of the

Main Variables

t$(9,50,43) holds transactions for all accounts. Each element consists of: **date** six characters, **debit/credit** one character, **reference** six characters, **comment** 15 characters, **amount** seven characters, **balance** seven characters, **debit/credit (bal)** one character. The first dimension is the account number and the second is the transaction number within the account

a$(9,198) holds account information. Each element consists of: **account name** 15 characters, **number of regular transactions** one character (0-9), **number of transactions** two characters (00-49), **regular transaction block** 180 characters (9 x 20). Each element consists of: **day of month** two characters, **comment** 10 characters, **amount** seven characters, **debit/credit** one character. The first dimension is account number

d$(6) current date

p$(6) date of previous update

q$(6) work date — used in regular transaction processing

v$(1) used as a validation result indicator and to hold menu responses

w$(7) work field

b$(35) used to hold a transaction temporarily

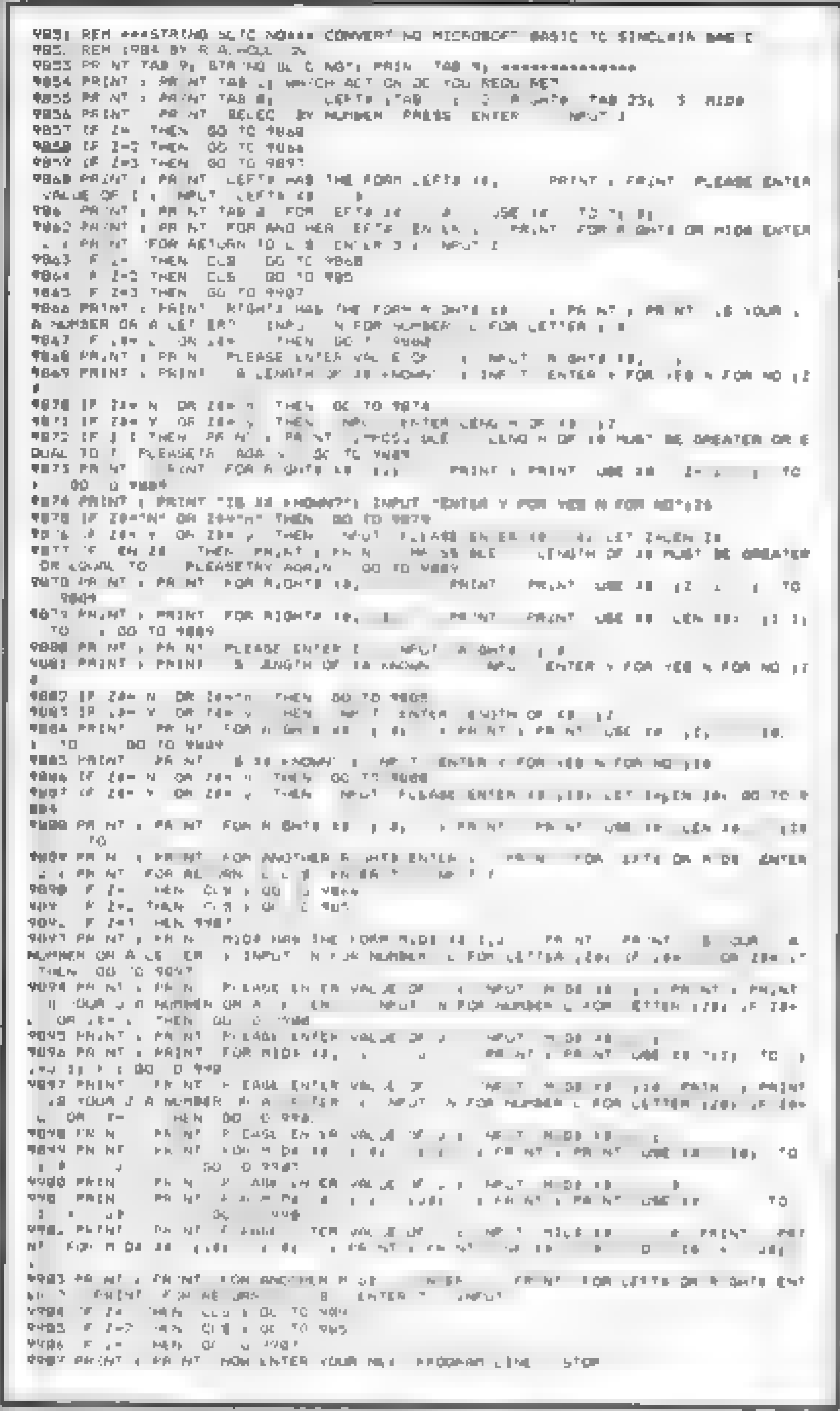
accts number of accounts

m(12) number of days in each month

i,j,k,l, subscripts

w,x,y work fields

Listing 2 — String Slicing: Converting Microsoft BASIC to Sinclair BASIC



previous run and any regular transactions within the intervening period are automatically added to the database

The SAVE facility caters for a cycle of three tapes (numbered 1-3) to safeguard against loss of data.

Here's a full list of all the facilities.

- Enquire on all accounts. Gives the current balance for each account and the total of all accounts

- Add an account. Consists of account name, up to 15 characters

- Delete an account

- Add a regular transaction for an account. Consists of day of the month (01-31), comment (up to 10 characters), amount (up to £99,999 99) and whether the transaction of a debit or credit

- Delete a regular transaction for an account

- Enquire on all regular transactions for an account Gives details of all regular transactions which currently apply

- Add a transaction Consists of reference (up to six characters, e g cheque number), comment (up to 15 characters, e g name of payee), amount (up to £99,999 99) and whether the transaction is a debit or credit The date is inserted by the program

- Delete a transaction

- Enquire on all transactions for an account Both manually entered and regular transactions — inserted by the program — are displayed

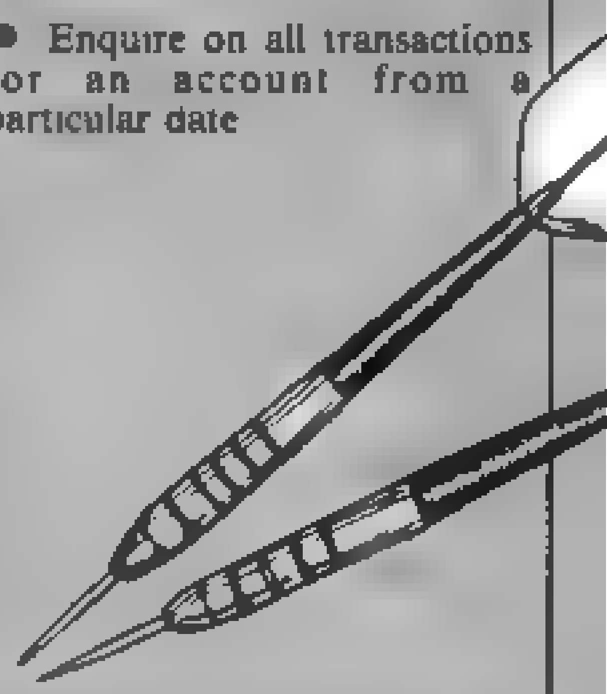
- Enquire on all transactions for an account from a particular date

How it works

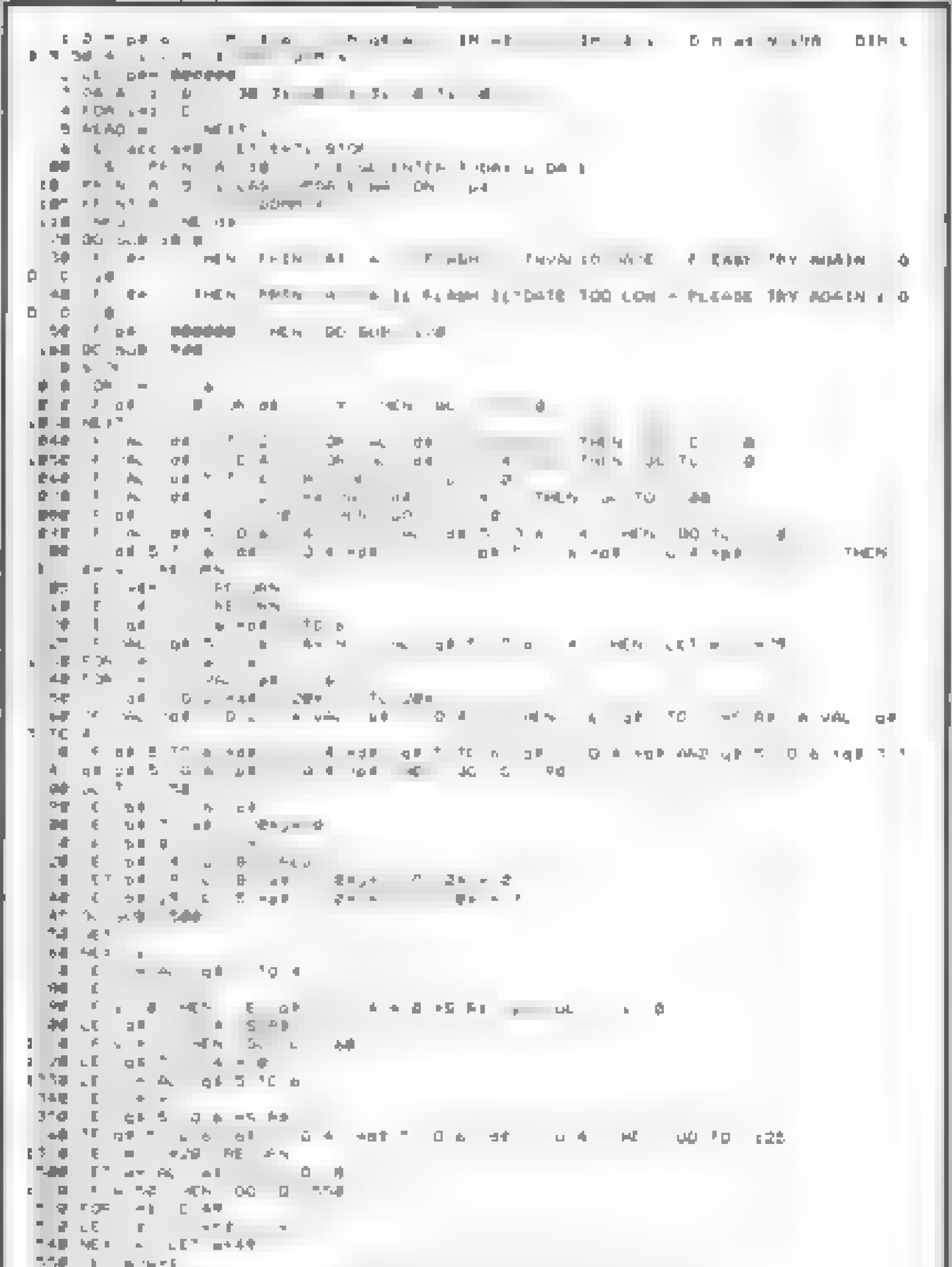
10-120	title sequence and instructions
150-270	initialisation routines
300-940	main loop, including
345-410	aiming circle routine
460-580	random variant routine
590-610	dart printing routine
700-868	score calculation for each dart
869-930	score display routines
950	beep routine for 180'
960-1030	test for finishing double, and change players
1050-1105	end-display sequence
1100-1240	main board graphic routines
1500-1600	user graphics routine and data

Variables

x,y	co-ordinates of moveable pixel in aiming circle
X,Y	co-ordinates of dart on main board
v	random variant
A	angle (in radians) of dart, relative to X-axis and centre of main board
D	distance of dart from centre of main board
s	score achieved by each dart (s1, s2, s3 are scores for each individual dart in set of three)
T(P)	total of player P (1 or 2)



Listing 3 — Accounts



```
1910 PRINT AT 4,0;"A - ADD A NEW ACCOUNT"
1920 PRINT AT 5,0;"B [illegible]"
1930 PRINT AT 6,0;"C [illegible] ACCOUNTS"
1940 PRINT AT 7,0;"D [illegible]"
[illegible]
1980 PRINT AT [illegible] CHOICES [illegible]
1990 NEXT [illegible]
2000 IF INKEY$[illegible] THEN [illegible] 2000
2010 LET [illegible]=INKEY$
[illegible] 100
[illegible] 22
[illegible] 1900
[illegible] THEN [illegible]
[illegible] THEN GO SUB 1040 [illegible] 400
[illegible] 1000
[illegible]
[illegible] PRINT AT [illegible] ACCOUNT [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] PRINT AT [illegible]
[illegible]
[illegible]
[illegible] GO SUB 9990 [illegible]
[illegible]
[illegible]
[illegible] PRINT AT 0,0
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible] ADD
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible] MENU
[illegible] GO SUB 9996
[illegible] THEN GO TO [illegible]
[illegible] INKEY$
[illegible] THEN RETURN
[illegible] THEN [illegible] 60
[illegible] AND [illegible] THEN [illegible]
[illegible]
[illegible]
[illegible] = 000
2400 RETURN
2450 CLS : PRINT AT 0,0; ACCOUNT [illegible]
[illegible] THEN [illegible]
2470 PRINT AT [illegible] ACCOUNT [illegible]
2480 PRINT AT [illegible]
2490 PRINT AT 14,0;[illegible] MAIN MENU
2500 IF INKEY$[illegible] THEN GO TO 2500
2510 LET [illegible]=INKEY$
[illegible] THEN RETURN
2530 GO TO 2500
2540 PRINT AT [illegible] PLEASE ENTER [illegible] ACCOUNT NUMBER
2550 PRINT AT [illegible]
2560 INPUT [illegible]
2570 IF LEN [illegible] THEN [illegible] 2600
2580 IF [illegible] THEN [illegible] 2600
2590 GO TO 2540
2600 GO SUB 9990: GO TO 2540
2610 PRINT AT [illegible] ACCOUNT NAME [illegible] TO [illegible]
[illegible] PRINT AT 2,0
2630 PRINT AT 3,0
2640 PRINT AT [illegible] PLEASE ENTER [illegible] THE FOLLOWING
2650 PRINT AT [illegible]
2660 PRINT AT [illegible]
2670 PRINT AT [illegible]
2680 PRINT AT [illegible] MAIN MENU
2690 GO SUB 9996
2700 IF INKEY$[illegible] THEN GO TO 2700
[illegible]
[illegible] THEN RETURN
[illegible] OR [illegible] THEN [illegible] 2900
[illegible] THEN GO TO 2700
[illegible] FOR [illegible]
[illegible]
[illegible]
[illegible]
[illegible] RETURN
2880 LET [illegible]
2890 CLS : PRINT AT 0,0; REGULAR [illegible]
2900 PRINT AT 2,0
2910 PRINT AT 4,0;"PLEASE ENTER 1 OF THE FOLLOWING"
2920 PRINT AT 6,0;"A - ADD REGULAR TRANSACTION"
2930 PRINT AT 7,0;"B - DELETE REGULAR TRANSACTION"
2940 PRINT AT 8,0;"C [illegible]"
2950 PRINT AT 9,0;"D [illegible]"
2960 PRINT AT 10,0;"E [illegible]"
2970 PRINT AT [illegible],0;"F [illegible]"
2980 PRINT AT [illegible],0;"G [illegible]"
2990 PRINT AT [illegible],0;"H [illegible] MAIN MENU"
2995 IF INKEY$[illegible] THEN GO TO 2995
2996 LET [illegible]=INKEY$
2998 IF [illegible] OR [illegible] THEN RETURN
2999 IF [illegible] OR [illegible] THEN [illegible]
3000 IF [illegible] OR [illegible] THEN [illegible] 3700: [illegible]
3010 IF [illegible] OR [illegible] THEN GO SUB 4150: [illegible]
3020 IF [illegible] OR [illegible] THEN [illegible] 4500: [illegible]
3030 IF [illegible] OR [illegible] THEN GO SUB 5000: [illegible]
3040 IF [illegible] OR [illegible] THEN GO SUB 6100: [illegible]
3050 IF [illegible] OR [illegible] THEN GO SUB 6600: [illegible]
3060 GO TO 2990
3100 CLS : PRINT AT 0,0; [illegible] ADDITION [illegible]
3105 PRINT AT [illegible]
3110 [illegible] THEN GO [illegible]
3120 PRINT AT [illegible] REGULAR [illegible]
3130 PRINT AT [illegible] PLEASE ENTER
3140 PRINT AT [illegible] MENU
3150 IF INKEY$[illegible] THEN GO TO [illegible]
3160 LET [illegible]=INKEY$
[illegible] THEN RETURN
3180 GO TO 3150
3170 PRINT AT [illegible] PLEASE ENTER DAY OF MONTH
[illegible] PRINT AT [illegible]
[illegible] INPUT [illegible]
3200 IF LEN [illegible] THEN GO TO [illegible]
[illegible] FOR [illegible]
[illegible] IF [illegible] OR [illegible] THEN GO [illegible]
3250 NEXT [illegible]
3260 IF [illegible] AND [illegible] THEN [illegible]
3270 GO SUB [illegible]
[illegible] PRINT AT [illegible] DAY [illegible]
[illegible]
3300 PRINT AT [illegible]
[illegible]
[illegible] GO SUB 9996
[illegible] INPUT [illegible]
[illegible]
[illegible]
[illegible]
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible]
[illegible] GO SUB 9996
[illegible] INPUT [illegible]
[illegible] GO TO 3000
[illegible] THEN [illegible]
[illegible] PRINT AT [illegible]
[illegible]
[illegible] PRINT AT [illegible]
3440 PRINT [illegible]
[illegible] GO SUB 9996
3460 INPUT [illegible]
```

```
[illegible]
[illegible]
[illegible]
[illegible] 4400
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] 9996
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible] THEN [illegible]
[illegible]
[illegible]
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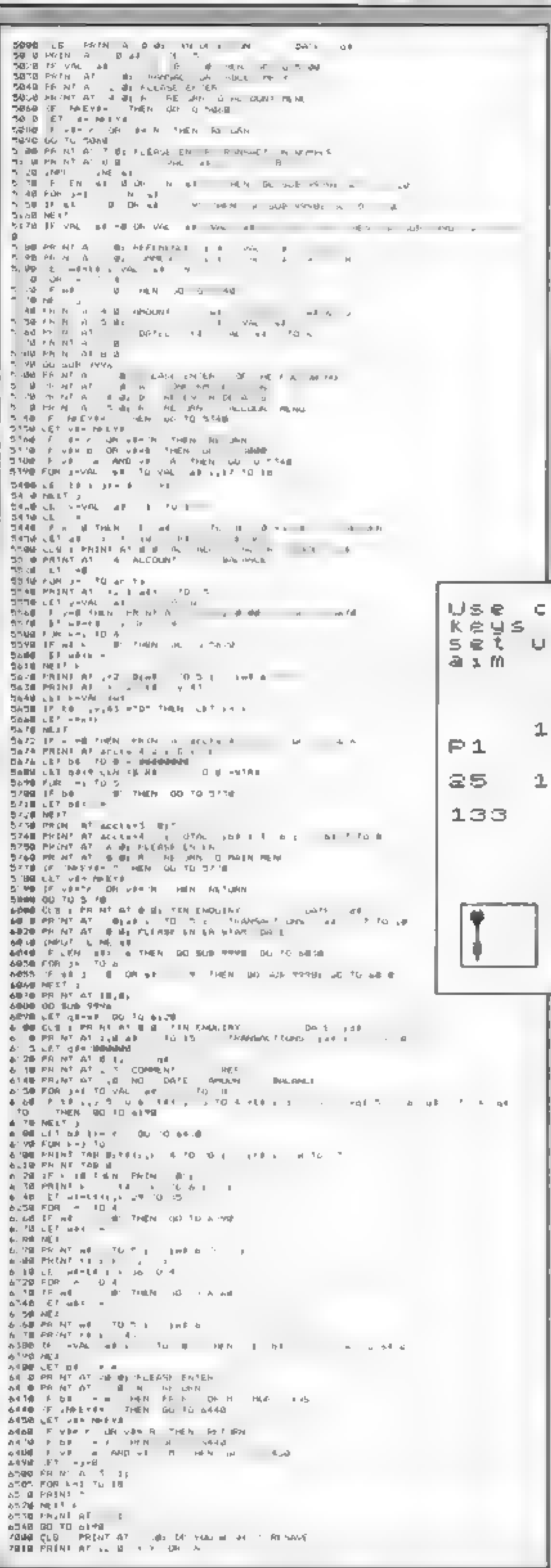
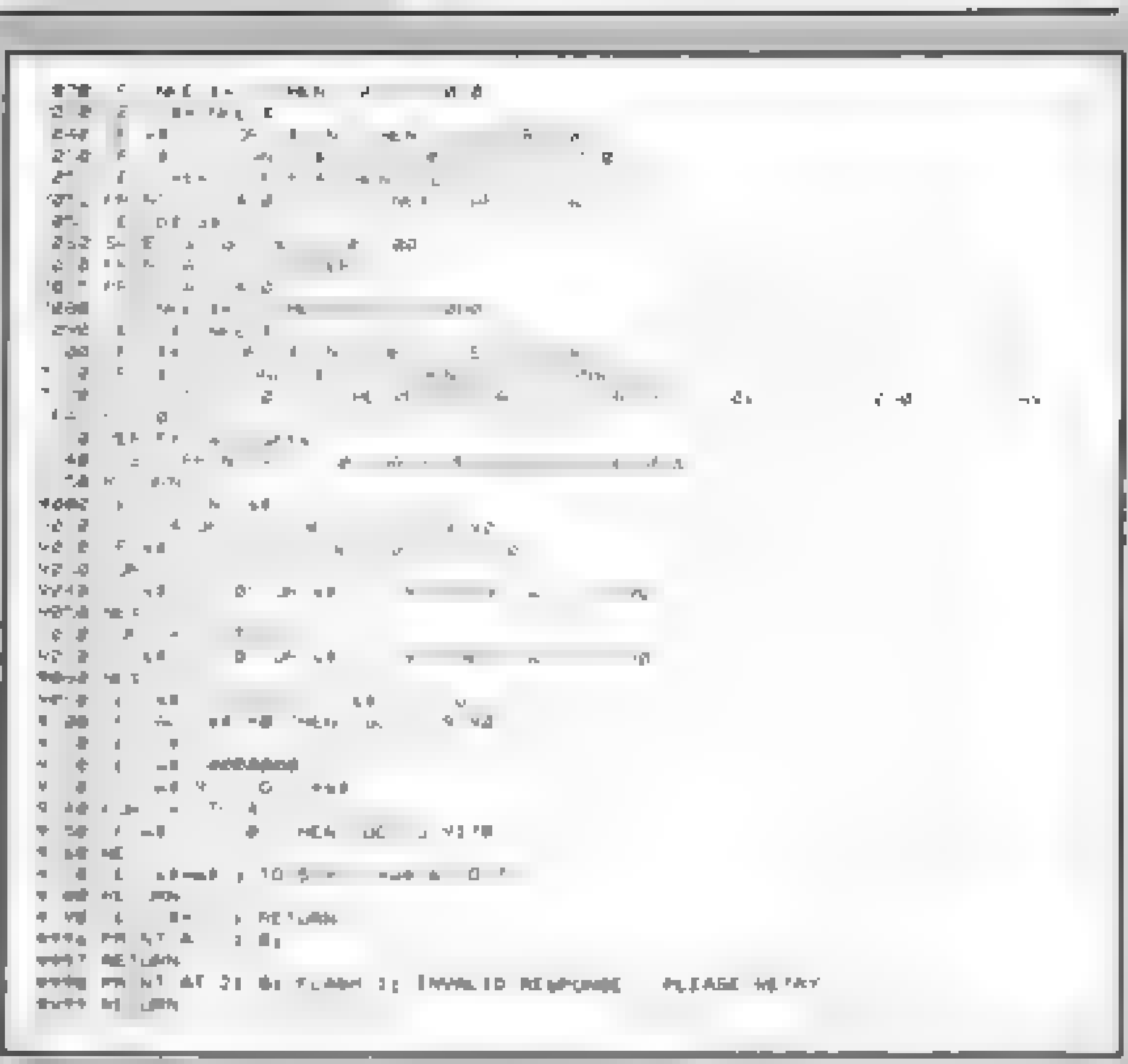
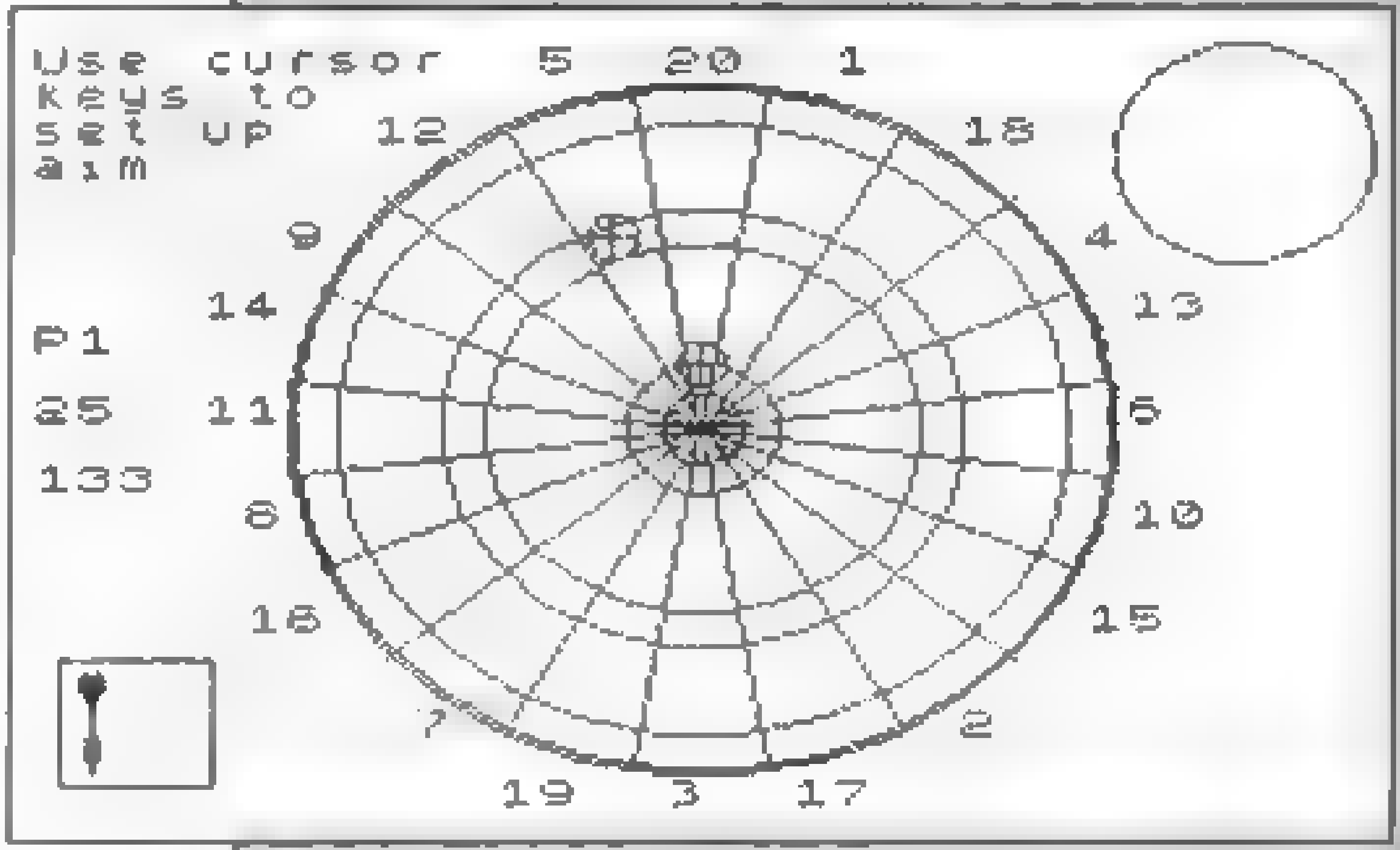
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] THEN [illegible]
[illegible] RETURN
[illegible] PRINT AT 0,0; [illegible]
[illegible]
[illegible] 1000
[illegible] PRINT AT [illegible] EMPTY
[illegible] PRINT AT [illegible] PLEASE ENTER
[illegible] PRINT AT [illegible] ACCOUNT MENU
[illegible] IF INKEY$[illegible] THEN GO TO 3760
[illegible] LET [illegible]=INKEY$
[illegible] THEN RETURN
3790 GO TO 3760
3800 PRINT AT [illegible] PLEASE ENTER [illegible]
[illegible] PRINT AT [illegible]
[illegible] INPUT [illegible]
[illegible] THEN [illegible] GO SUB 9990 [illegible]
3840 IF [illegible] THEN GO SUB 9996 [illegible]
3850 PRINT AT [illegible]
3860 PRINT AT [illegible]
3870 GO SUB 9996
3880 [illegible]
3890 PRINT AT [illegible]
3900 PRINT AT [illegible]
3910 [illegible] TO [illegible]
[illegible]
3930 IF [illegible] THEN GO TO [illegible]
[illegible] NEXT
3940 LET [illegible]
3950 PRINT AT [illegible] AMOUNT [illegible]
3960 PRINT AT [illegible]
3970 PRINT AT [illegible] PLEASE ENTER [illegible] THE FOLLOWING
3980 PRINT AT [illegible]
3990 PRINT AT [illegible]
4000 PRINT AT [illegible] MENU
4010 IF INKEY$[illegible] THEN GO TO 4010
4020 LET [illegible]=INKEY$
4030 IF [illegible] THEN RETURN
4040 IF [illegible] THEN [illegible] 100
4050 IF [illegible] AND [illegible] THEN [illegible] 4010
4060 FOR [illegible] TO [illegible]
[illegible]
4080 NEXT
4090 LET [illegible]
4100 [illegible]
[illegible]
4120 RETURN
4130 CLS : PRINT AT 0,0; REG [illegible] ENQUIRY [illegible] DATE [illegible]
4140 PRINT AT [illegible]
[illegible] PRINT AT [illegible] AMOUNT [illegible]
[illegible] FOR [illegible]
[illegible] PRINT AT [illegible]
4200 PRINT AT [illegible] TO [illegible]
[illegible] PRINT AT [illegible]
[illegible]
[illegible] FOR [illegible]
4240 IF [illegible] THEN GO TO 4270
4250 IF [illegible]
4260 NEXT [illegible]
[illegible] PRINT AT [illegible] TO [illegible]
[illegible] PRINT AT [illegible]
[illegible] NEXT [illegible]
[illegible] PRINT AT [illegible] PLEASE ENTER
[illegible] PRINT AT [illegible] ACCOUNT MENU
[illegible] IF INKEY$[illegible] THEN GO TO [illegible]
[illegible] LET [illegible]=INKEY$
[illegible] IF [illegible] THEN RETURN
4370 GO TO [illegible]
4380 CLS : PRINT AT 0,0; [illegible] ADDITION [illegible] DA[illegible]
4390 PRINT AT [illegible] TO 15
[illegible] PRINT AT [illegible] PLEASE ENTER REFERENCE
[illegible] PRINT AT [illegible] CHARACTERS
4430 INPUT [illegible] LINE [illegible]
4440 IF [illegible] THEN GO SUB 9998: GO TO 4530
4450 PRINT AT [illegible] REFERENCE [illegible]
4460 LET [illegible]
[illegible] PRINT AT [illegible] PLEASE ENTER [illegible]
4500 PRINT AT [illegible] CHARACTERS
4570 GO SUB 9996
4580 INPUT [illegible] LINE [illegible]
[illegible] IF LEN [illegible] THEN GO SUB 9998: GO TO 4580
[illegible] PRINT AT [illegible]
[illegible] LET [illegible]
4640 PRINT AT [illegible] ENTER AMOUNT
4650 PRINT AT [illegible]
4660 GO SUB 9996
[illegible] INPUT [illegible] LINE [illegible]
4680 GO SUB 9990
[illegible] IF [illegible] THEN [illegible] 9998: GO TO [illegible]
[illegible] PRINT AT [illegible] AMOUNT [illegible]
[illegible]
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible]
[illegible] GO SUB 9996
[illegible] INPUT [illegible] LINE [illegible]
[illegible] THEN [illegible] 9998: GO TO [illegible]
[illegible]
[illegible] THEN [illegible]
[illegible] THEN GO SUB 9998: GO TO [illegible]
4820 PRINT AT [illegible]
[illegible]
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible]
4842 GO SUB 9996
4850 PRINT AT [illegible]
4860 PRINT AT [illegible]
[illegible] PRINT AT [illegible]
[illegible] PRINT AT [illegible] MENU
4892 IF [illegible] THEN [illegible]
4900 [illegible]
[illegible]
[illegible] THEN [illegible] 4520
[illegible] THEN [illegible] 4890
4942 LET [illegible]
4950 GO SUB 2500
4960 RETURN
```





How Super Darts will look on your screen


Use cursor keys to set up aim
5
20
1
12
18
9
4
14
13
P1
25
11
6
133
8
10
16
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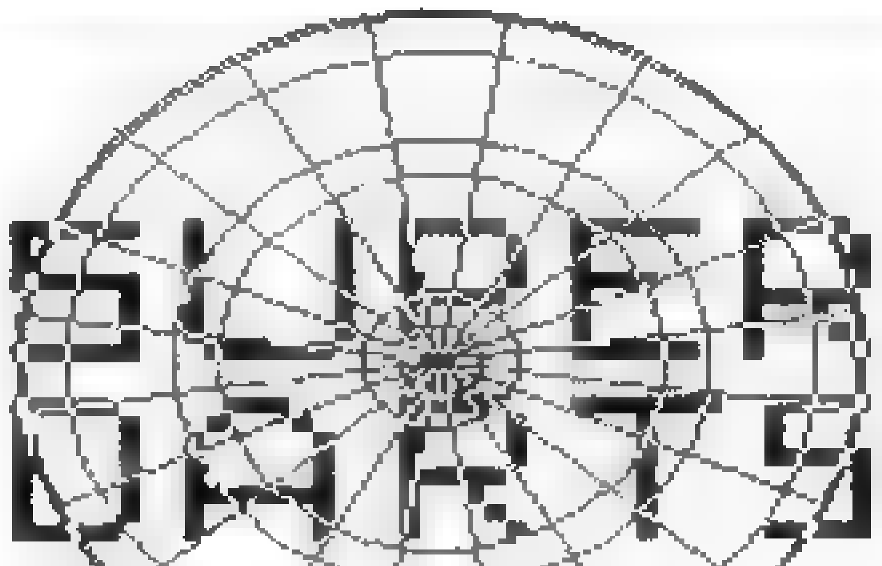
3
17


SUPER DARTS

Super Darts is available on cassette for £3.50, including postage and packing. Send a cheque or postal order, made out in the name of M. Stanger, to Super Darts, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Your cassette will arrive within 28 days. This offer expires six weeks from the date of this issue of Home Computing Weekly.

Now get out of these

...Our reviewers managed to return with their ratings of new strategy and adventure games

The Crypt
48K Spectrum
£4.95

Carnell, North Weylands Ind Est., Molesey Rd, Hersham, Surrey KT12 3PL

You must defeat Satan by finding a sacred crucifix, hidden in one of the many crypts

Each contains obstacles, a monster, and a chest which may help you. Your's and the monster's strength is given as well as your food and gold levels

It's best to avoid the monsters but you can fight if you are carrying a sword.

Keys are well chosen but the keyboard reading is very imprecise and the movement slow. On moving into a different crypt a blood cell attack is sometimes reported which requires quick reactions. To escape death in Frankenstein's crypt you must press a seemingly irrelevant key

There are six levels, accessed by a password which you are only told after completing the previous level. You are told the first. There is a good range of monsters but no apparent difference in character.

The locations appear to be totally random — if you return to a crypt you will find a different monster and a changed layout of obstacles.

I didn't find this inspiring. It poses a limited challenge as an adventure and is too slow for an arcade game. S.E.

instructions	50%
playability	40%
graphics	62%
value for money	55%

★★★

Pacific War
48K Spectrum
£6

CCS, 14 Langton Way, London SE3 7TL

You control the American forces in the Battle of the Eastern Solomons, which took place during August 1942.

The Japanese, commanded by your Spectrum, intend to reinforce their troops on the island of Guadalcanal and you must destroy the Japanese task forces

There are nine skill levels, and you can select the starting points of your task forces. On the map only your ships and aircraft are shown, so you must despatch search aircraft to find the enemy positions

You can send out air strike forces by selecting the appropriate aircraft and their target position, remembering the ships may have moved by the time your aircraft reaches them

You are also able to assign some of your fighters to Combat Air Patrol to help defend your ships. However, you are limited to three air missions per carrier.

After each game turn the status of each task force is displayed and the score given

An absorbing game, but I would have preferred more information on strategy and tactics S.E.

instructions	80%
playability	70%
graphics	65%
value for money	80%

★★★★

Classic Adventure
48K Spectrum
£6.95

Melbourne House, 131 Trafalgar Rd, London SE10

This really is what it suggests, the classic Dungeons and Dragons type text-only adventure And as such it s superb! No manual with this The barest instructions leave you lots to explore

You find yourself outside a building After much wandering, you may eventually find the entrance to the underground maze of caverns and it's huge! I say may, because part of the enjoyment of a decent adventure is trying to work out the rules and how to move around Much pleasure is gained from trying to outwit the programmer

There are dragons, trolls, dwarves, all unfriendly, and you can collect diamonds, golden eggs, nuggets and so on You will find various objects to help but I never met a friendly creature yet

One of the delights is the cruel humour. Once you reach the cavern called Witts End, you're really in trouble, and should you type in a naughty word out of frustration, the result is entertaining to say the least

Every Spectrum owner should have this. It's excellent, but be warned, it's also very addictive Previously published as Adventure I by Abersoft at £9 95 D.M.

instructions	N/A
playability	95%
graphics	N/A
value for money	90%

★★★★★

War 70
48K Spectrum
£6

CCS, 14 Langton Way, London SE3 7TL

A two player war game set in the mid 18th century The aim is to capture your opponent's capital by occupying it for three days. For each day you have the option of regrouping any of your nine armies and you can move up to four groups of armies

When opposing forces meet play switches to a map of the battlefield — each of the 32 locations has a different map

Each player then sets the destination co-ordinates of each unit. If a unit is within close range of the enemy you may fire The unit will return fire and casualties calculated. If two units meet hand-to-hand fighting takes place

Artillery can fire over a long distance, but it is difficult to judge angles and range A unit is defeated when it is less than a third full strength or it has failed two morale tests, depending on casualties officers and a random factor When all of an army's units have been defeated the battle ends and play returns to the main map

An interesting game that takes too long — and you must find an opponent S.E.

instructions	60%
playability	55%
graphics	50%
value for money	75%

★★★★

Pirate Adventure
32K BBC

Adventure International, 119 John Bright St, Birmingham B1 1BE

An original Scott Adams adventure. I couldn't help noticing a few Americanisms in the output. But, it is yet another good adventure

There aren't too many instructions and I suspect this is to make the game the more interesting. You use two-word commands and N,S,W etc. to move

The game starts in a building After collecting the very important book and safety sneakers you transport yourself to Pirate Island where you need to build a boat to cross to Treasure Island

This stage is very difficult and needs a lot of thought. Some things seem so obvious they can't be true but you must try every approach

It's disappointing there are no graphics. However, this would limit the large vocabulary. Even so, I have spent ages trying to explain what I want to do

The cassette presentation is of a good standard and at least the words are different colours to distinguish commands from the answers and information from objects during the actual game. Anyone could spend ages playing this game. If you can master it, other, later adventures are harder D B.

instructions	40%
ease of use	70%
display	70%
value for money	80%

★★★★

CHARTBUSTERS

BRITAIN'S SOFTWARE CHARTS

by the ASP Market Research Group

ARCADE

1	Atic Atac	Ultimate	Spectrum(3)
2	Jet Set Willy	Software Projects	Spectrum(2)
3	Space Pilot	Anirog	CBM 64( )
4	Manic Miner	Software Projects	Spectrum( )
5	Manic Miner	Software Projects	CBM 64( )
6	Bongo	Anirog	VIC-20(-)
7	Light Cycles	PS	Spectrum( )
8	Falcon Patrol	Virgin	CBM 64(4)
9	Hunchback	Ocean	Spectrum(-)
10	Flying Feathers	Bubble Bus	CBM 64(-)

NON-ARCADE

1	Twin Kingdom Valley	Bug-Byte	CBM 64(-)
2	Golf 64	Abrasco	CBM 64(-)
3	Hobbit	M House	Spectrum(2)
3	Home Manager	Abrasco	CBM 64(-)
5	Golf Spectrum	Abrasco	Spectrum(-)
6	Twin Kingdom Valley	Bug-Byte	BBC(-)
7	Pool	CDS	Spectrum( )
8	Mad Martha	Microgen	Spectrum(-)
9	Dragonbane	Quicksilva	Spectrum(-)
10	The Valley	APS	VIC 20(-)

Compiled with the assistance of Britain's leading software distributors, including: Pinnacle, SDL, PCE, Websters, PCS and Software Centre.

SPECTRUM

1	Jet Set Willy	Software [illegible] (2)
2	Chequered Flag	Psion (4)
3	Scuba Dive	Durrell (6)
4	Atic Atac	Ultimate (1)
5	Hunchback	Ocean ( )
6	Flight Simulation	Psion (10)
7	Lunar Jetman	Ultimate (2)
8	Pogo	Ocean (7)
9	Snowman	Quicksilva (-)
10	Speed Duel	DK tronics (-)

COMMODORE 64

1	Crazy Kong	Interceptor (3)
2	Buga Boo (The Flea)	Quicksilva (6)
3	Revenge of the Mutant Camels	Llamasoft ( )
4	Super Blitz	Commodore (-)
[illegible]	[illegible]	Software Projects (2)
6	Chinese Juggler	[illegible]
7	[illegible]	[illegible] ( )
[illegible]	[illegible]	Ocean (-)
9	Tank Attack	Superior (-)
[illegible]	[illegible]	M House (—)

DRAGON 32

1	Chuckle Egg	A&F (1)
2	Up Periscope	Beyond (7)
3	Pedro	Imagine (8)
4	Hungry Horace	M House (6)
5	Devil Assault	Microdeal (-)
6	Ring of [illegible]	Wintersoft (-)
7	Frogger	Microdeal (10)
8	Kriegspiel	Beyond (3)
9	Dragon Chess	Oasis (-)
10	Skramble	Microdeal (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

VIC-20

1	Snooker	Visions (-)
2	Crazy Kong	Interceptor (2)
3	Wizard and the Princess	M House (3)
4	Flight 015	Ferranti Davenport (1)
5	Jet Pac	Ultimate (6)
6	Gridrunner	Llamasoft (9)
7	Arcadia	Imagine (8)
8	Snowman and Maths Maze	Commodore(7)
9	Race	Commodore (-)
10	Supervaders Bomber Run	K-tel (-)

HOME COMPUTING WEEKLY

BRITAIN'S BRIGHTEST

ZX81

1	Mothership	Sinclair (-)
2	Crazy Kong	PSS (3)
3	Fantasy Games	Sinclair (-)
4	Flight Simulation	Sinclair (-)
5	Space Raiders	Sinclair (-)
6	Asteriods	Quicksilva (2)
7	Skramble	Quicksilva (1)
8	Chess 1K	Sinclair (-)
[illegible]	[illegible] Manager	Addictive (4)
10	Defenders	Quicksilva (5)

Tiger distribution
1st
MIKRO-GEN
LASERWARP
commodore 64
Maziacs
DK'Tronics
FRED
QUICKSILVA
PSI-SPY
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HOPPER
TWIN PACK
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Glug-Glug

48K Spectrum

£5.95

CRL, 9 Kings Yard, Carpenters Row, London

This is a beauty! You are a fearless deep sea diver recovering sunken treasure. The snag is that the treasure is guarded by a succession of nasty sea creatures. The better you do, the nastier the mixture gets! There are 32 different screens, which should keep you quiet for a while.

The basic layout shows a boat on the surface and the diver below, connected by lifeline Protected by his quick-firing dart gun, he can be controlled from either keyboard or Protek/ Kempston joystick to collect the treasure. Diver and beasties scroll around smoothly with unpleasant, but nicely represented, things happening when fighting fish, giant squids and octopus get to you. Beware the crabs, which are impenetrable, and the hunter sharks which go for the lifeline All in all, super graphics, but the sound, though good quality, is a bit sparse

The nice feature is that anyone can succeed to some extent; points are gained by shooting assailants. If you want to reach the next level however, you must collect the treasure. The result of this well judged level of difficulty is that there's something here for everyone, young or old, expert or beginner Recommended. **D.M.**

instructions	95%
playability	100%
graphics	95%
value for money	90%

★★★★★

Dr Franky and the Monster

48K Spectrum

£5.95

Virgin, 61/63 Portobello Rd, London W11 3DD

You control Dr Franky who must turn his monstrous creation into a human being by collecting flasks of life-giving chemicals placed in his dungeons. Unfortunately, the people he used to make the monster have turned into ghosts and are desperate for revenge

You must jump up the holes on each platform to reach the flask, which you must then take to the dormant monster on the far side

Be quick or else the ghosts trap you and collision means death. You must also avoid the layer of bricks that move down the gap in the centre of the screen and the truck which crosses the top platform

There also appears to be a time limit because Dr Franky appears to die for no other apparent reason if you wait around too long. Controls are simple but response can be slow at times which makes Dr Franky difficult to control. There are nine different dungeons and a magic hammer will help you on some.

The main drawback is that this game is fiendishly difficult to play. There are too many ghosts for my liking and they are far too intelligent' **S.E.**

instructions	75%
playability	50%
graphics	75%
value for money	70%

★★★

Ed On

Spectrum £5

CCI, Units 2, 3 and 4 Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ

I didn't think it would take long before someone produced a souped-up machine code version of this old favourite of the magazine listings

You play a racing car trapped within a maze Your job is to collect all the dots — don't ask me why — while avoiding the computer controlled car Your only defence against collision is to change lanes at the last possible second, since the computer follows you closely You also have full speed control, which is very important in trying to outwit the computer's car which only travels at one speed

It sounds deceptively simple In fact I have only managed to clear the first screen once, after which there are no less than two of the turbo-charged terrors to contend with A nice touch are flags which can be picked up for bonus points, but these tend to keep the mind from the task in question avoiding the computer's car

Sound and graphics are nothing to write home about, but comprehensive instructions are supplied and the game is fun. It does my ego good to beat the computer at something, and this game ensures this doesn't happen very often **T.B.**

instructions	90%
playability	80%
graphics	50%
value for money	50%

★★★

Doomsday Castle

48K Spectrum

£6.50

Fantasy, Fauconberg Lodge, 27A St George's Rd, Cheltenham Glos GL50 3DT

The scenario is a little odd because you are exploring a fantasy castle using something like a space capsule. This slightly spoils the usual illusion, but not much because this is an excellent attempt to turn an adventure into an arcade-style game

You must explore the castle in your capsule, seeking to restore the six lost elven stones. The castle consists of 25 main chambers connected by 49 corridors Each is infested with monsters with quaint and frightening names like Urks, Googly birds and Garthrogs. Each has its own pattern of behaviour and the result is a linked arcade game of 74 screens in which the player has some choice over which screen he or she will play, providing the castle has already been explored This, of course, is not easy

Graphics are excellent The game is compulsive, varied, entertaining, well balanced, well designed and has a pause feature for when things become too much. I particularly like (= hate) the way the Googly bird will suddenly wake and send deadly thread bouncing around Highly recommended **N.W.**

instructions	90%
playability	95%
graphics	95%
value for money	90%

★★★★

Bimbo

Spectrum

£5.45

Joe the Lion, 157 Market St, Hyde, Cheshire SK14 1HG

Strange game this — cross between Watership Down and Tranz-Am! A moving maze scrolls in all directions as you control Bimbo the Rabbit You have to get Bimbo to eat carrots, drop apples to distract pursuing black rabbits and avoid holes. Extra points are gained by eating clover. Your radar (Radar? For rabbits? Ah well) shows the location of carrots, Bimbo and the black turbos... sorry, rabbits. Eat all 10 carrots on each level to reach the next, but when you do, more black rabbits appear. The more you chase about, the more your energy level drops and the more carrots you need to eat Every fourth level, there are no pursuers, just a race against time to get the fuel... sorry, carrots.

Graphics are quite well done, though distinctly 2D. And boy, is this game fast! The inlay card says 100,000 is good, 250,000 brilliant. I couldn't even raise 1 000' There ought to be variable difficulty levels.

Although professionally produced, with good presentation, the concept just isn't original or addictive enough. It hasn't been done with rabbits before but... **D.M.**

instructions	95%
playability	[illegible]
graphics	80%
value for money	70%

★★★

FIVE MILLION BARBARIANS
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THE
FALL OF
ROME

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CODENAME MAT
jet set willy

PCW REVIEW 15/3 84 ...one of the best Spectrum games I've seen this year ... a cross between Timegate, Star Raiders and Star Trek but with dozens of extra features and 3D sprite graphics ...other features include warp drive and 3D logic i.e. everything moves on the scanners according to true spacial logic ...amazing graphics ... in terms of current pricing policies for Spectrum programs its worth twice its price

NORMAL PRICE £6.95
OUR PRICE £5.00

NORMAL PRICE £[illegible] 95
OUR PRICE £5.00

PCW REVIEW 29/3/84 ...worth the wait ...possibly even better than the original. Different elements include the much wider variety of screen layouts, the chance to go through rooms in more or less any order and special obstacles like swinging ropes. It's technically brilliant, funny and of course completely addictive. Work halted for several hours when it arrived in the office

2 HOUR DESPATCH PLEDGE

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MUSIC BY CHRIS COX

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Moon Lander by Yarko Blahyj

Use your skill and judgement to land your spacecraft on the moon's surface.

But don't descend any faster than 20mph or the consequences will be serious. This game needs a joystick.

- We always inserts REMs in Commodore listings as an aid to recognising the control characters as you type in the programs. These REMs should not be entered.

Sound Effects by M. Serbert

Here are a few sound effects I use in my hobby, writing adventure games. I would like to see what other readers could produce.

Lines 1 to 5 set up the sound variables and 10 to 100 print the selection menu.

Each sound is then generated in a separate subroutine so they can be used individually.

The menu numbers correspond with the routines, so sound No. 1 starts at line 1000.

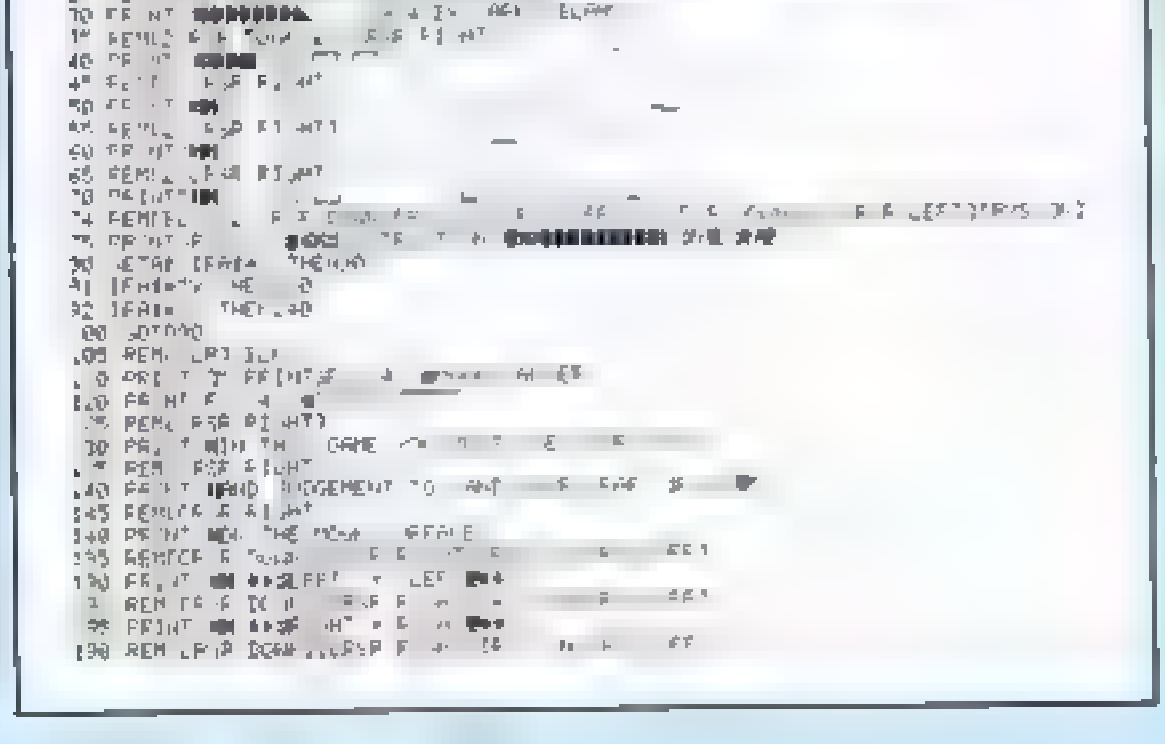
The subroutine at line 10000 simply clears all the sound registers and this is called at the start of every sound to be generated.

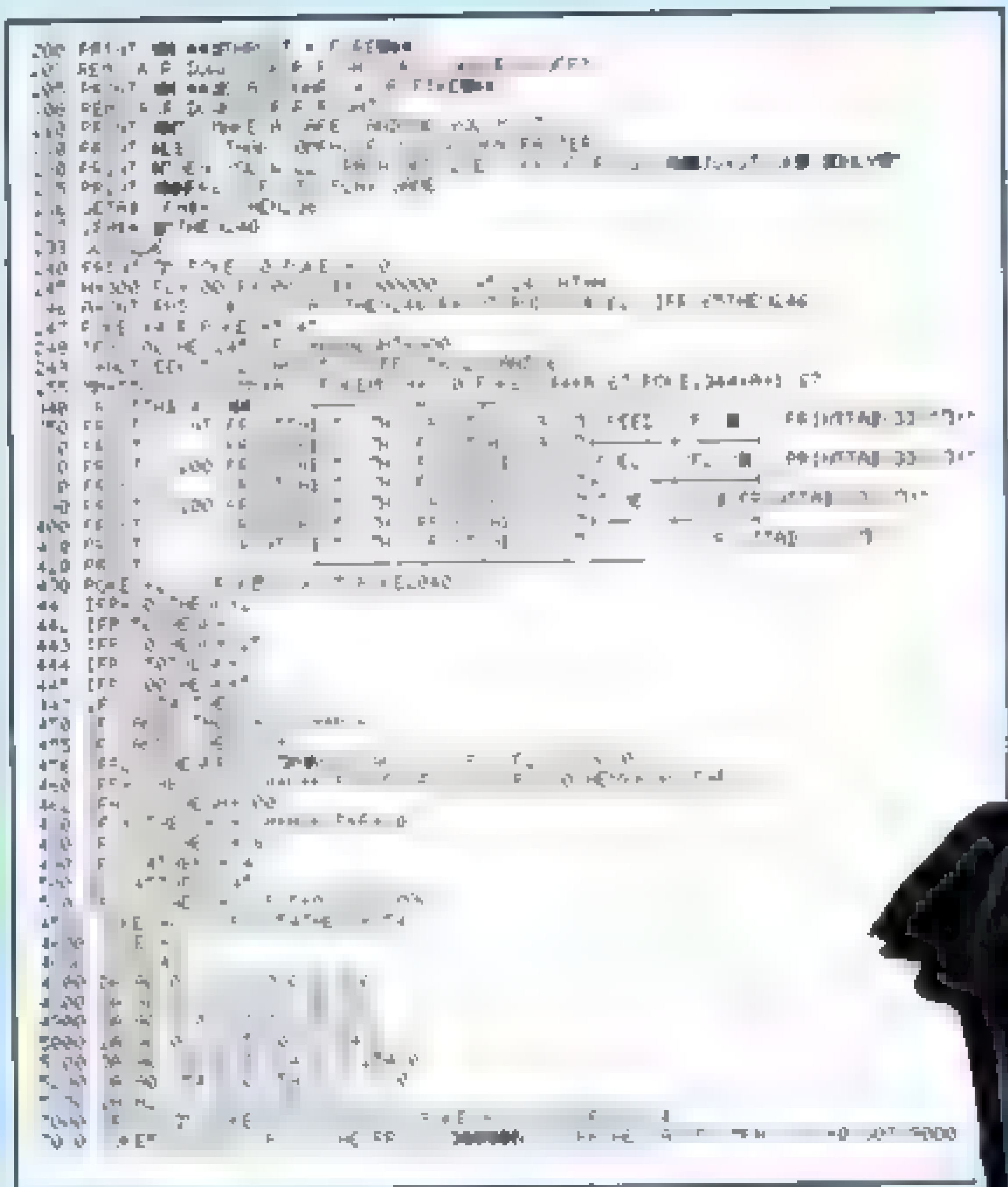
The routines are straightforward, short loops and mainly voice 1. The sounds are generated by POKEing values into the variables.

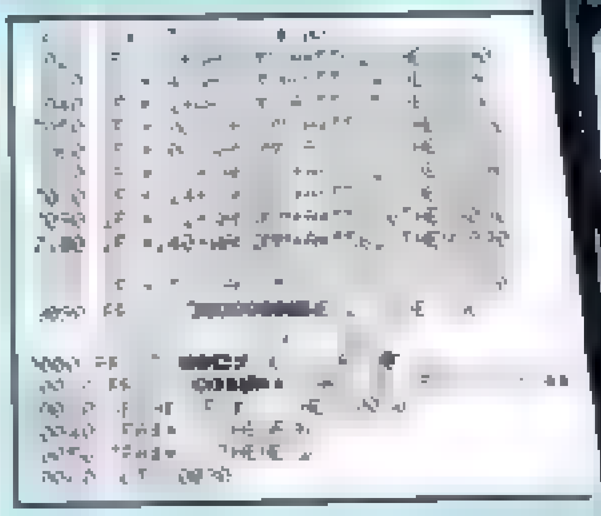
Variables

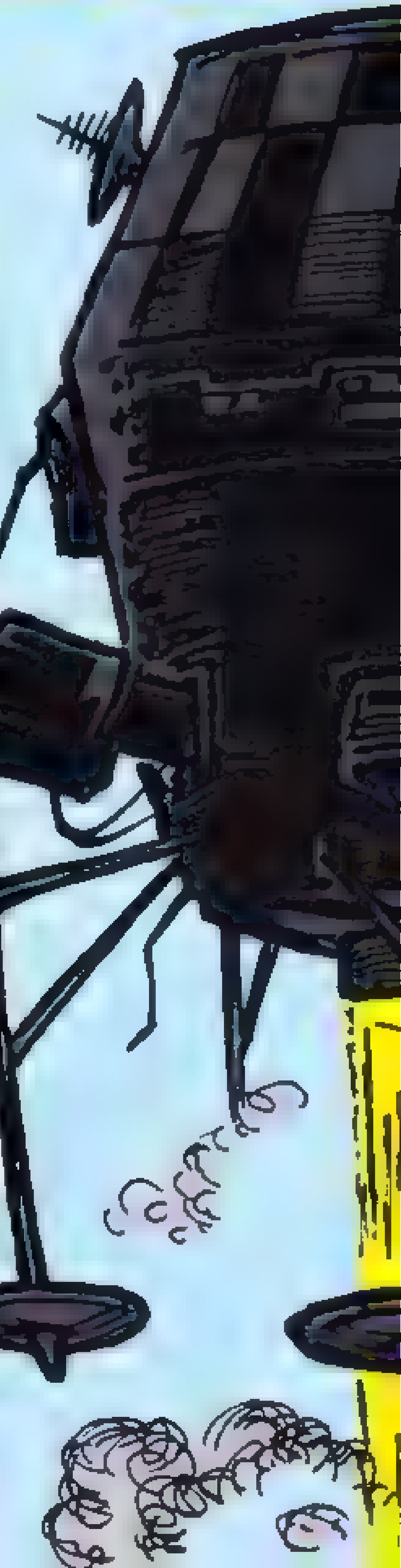
Wf	waveform
Hf	high frequency voice 1
Lf	low frequency voice 1
H3	high frequency voice 3
L3	low frequency voice 3
VO	volume control
AD	attack and decay voice 1
SR	sustain and release voice 1

Listing 1 — Moon Lander









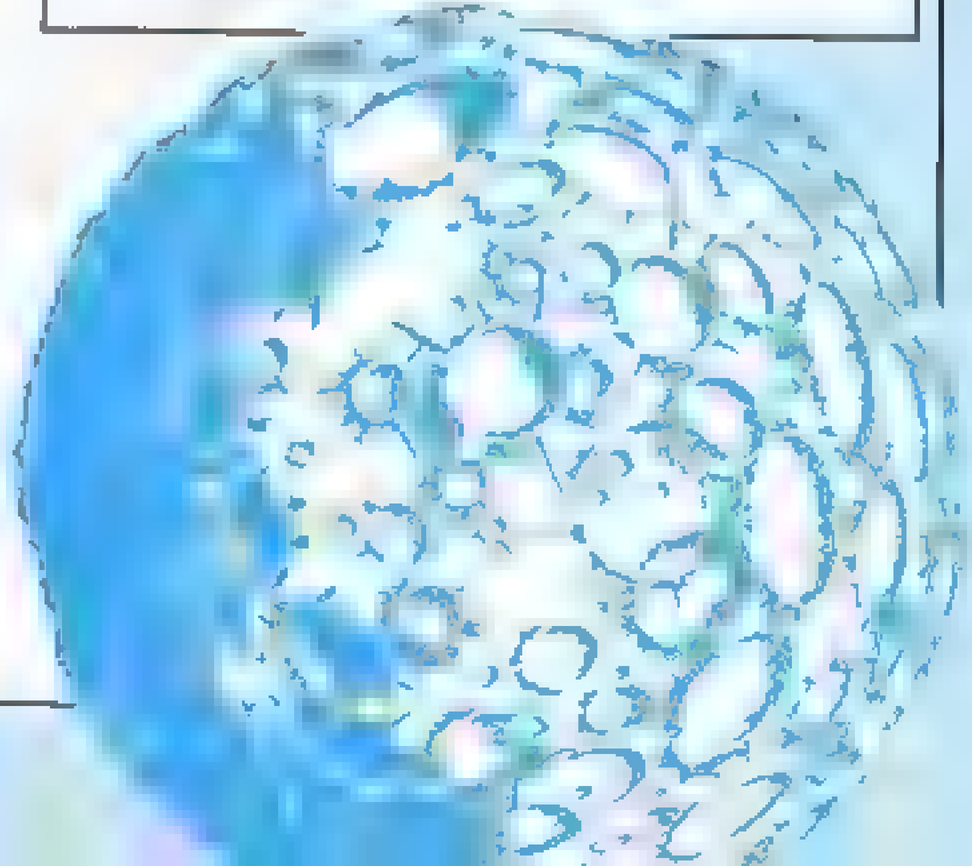
space skill nds you use

Listing 2 — Sound Effects

```
[illegible]
```

```
[illegible]
```

```
[illegible]
```



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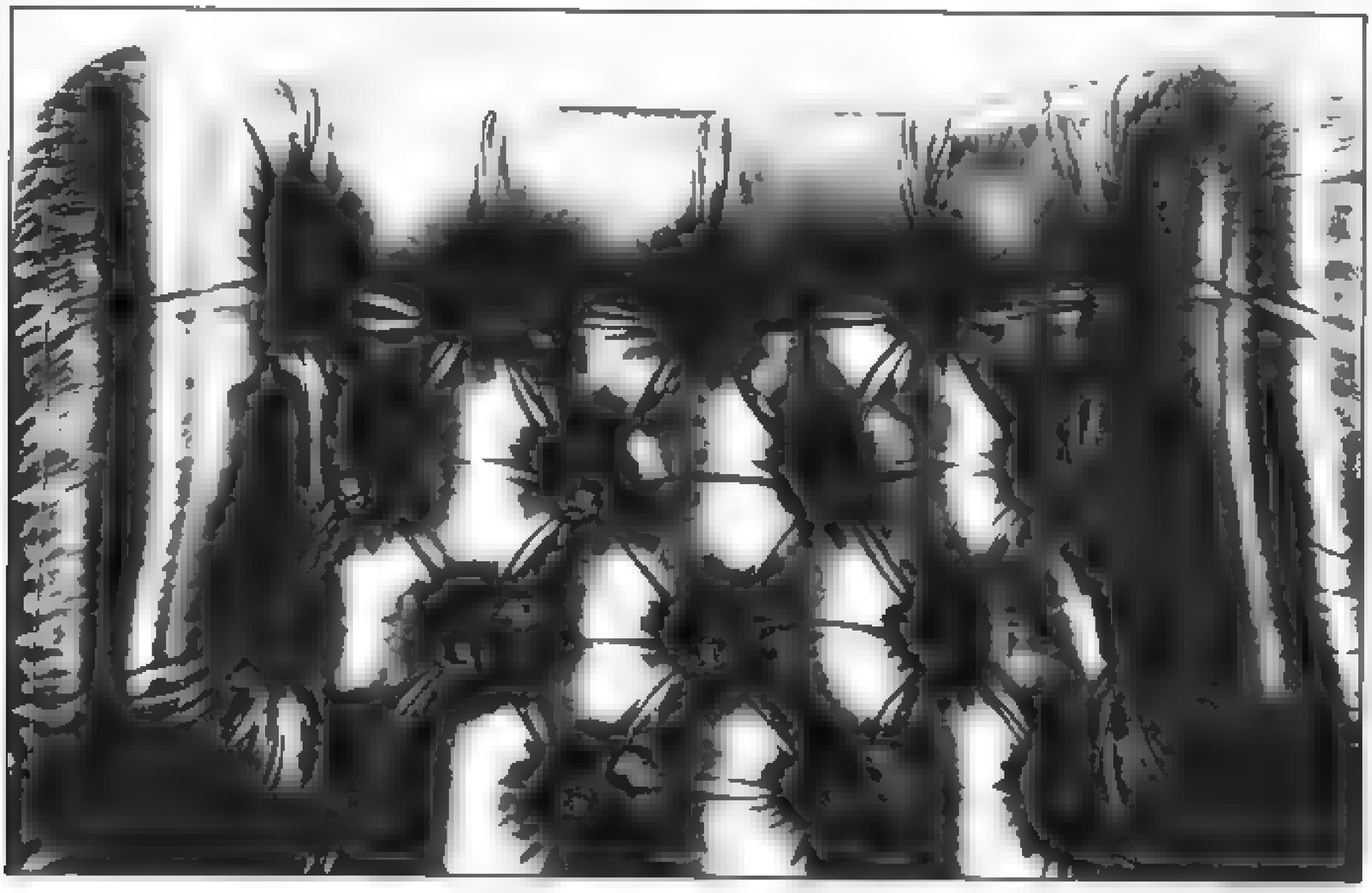

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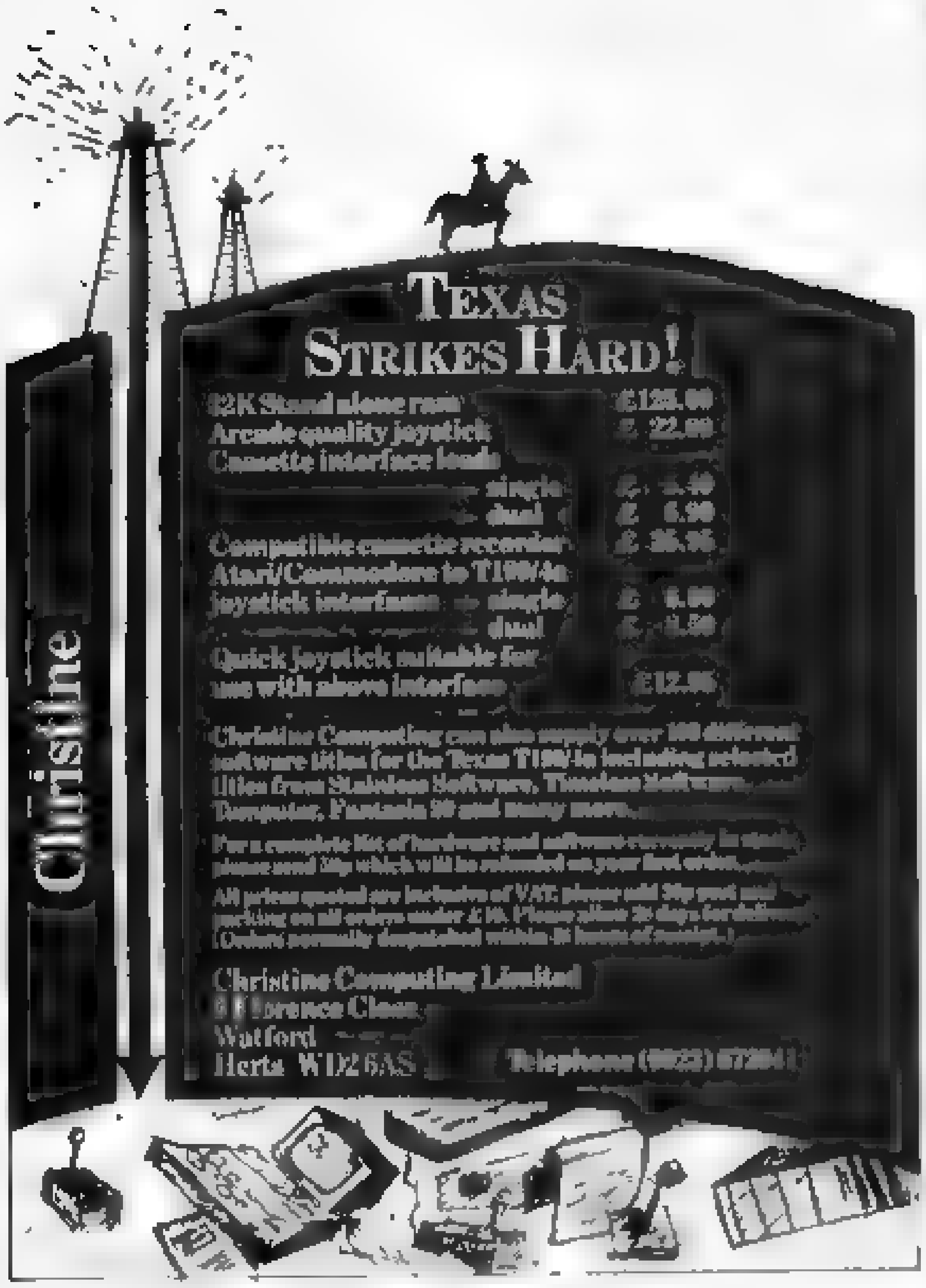

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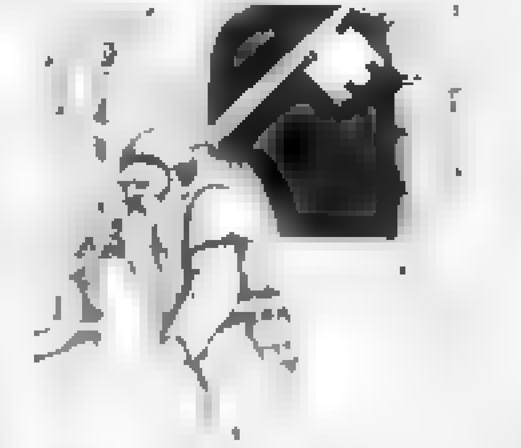

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```
40 CLS:PRINT:PRINT"***************PAIRS****************"
50 PRINT:PRINT"IF YOU NEED INSTRUCTIONS PRESS  'ENTER'
ELSE PRESS ANY KEY."
60 A$=INKEY$:IF A$="" THEN 60
70 IF A$=CHR$(13) THEN 680
80 DIMP(11,6),B(11,6),C(11,6),CC(50),TT(50),P$(2),G(2)
90 CLS8
100 CLS:PRINT:INPUT"FIRST PLAYER'S NAME";P$(1)
110 PRINT:INPUT"SECOND PLAYER'S NAME";P$(2)
120 REM******INITIALISE********
130 S(1)=0:S(2)=0:N=1
140 FOR X=1 TO 6
150 FOR Y=1 TO 11
160 READP(Y,X)
170 NEXT Y,X
180 FOR X=1 TO 6
190 FOR Y=1 TO 11
200 READB(Y,X)
210 NEXT Y,X
220 CLS5
230 FOR X=1 TO 6
240 FOR Y=1 TO 11
250 POKE P(Y,X),B(Y,X)
260 NEXT Y,X
270 FOR X=1408 TO 1535
280 POKEX,143
290 NEXT
300 PRINT@384,P$(1)"'S":PRINT@405,P$(2)"'S";
310 PRINT@417,"SCORE"S1:PRINT@438,"SCORE"S2;
320 FOR X=1 TO 50:READCC(X):NEXT
330 SOUND89,2
340 FOR Y=50 TO 1STEP-1:R=RND(Y):TT(Y)=CC(R):CC(R)=CC(Y
):NEXT
350 SOUND145,2
360 FOR X=2 TO 6
370 FOR Y=2 TO 11
380 C(Y,X)=TT(N):N=N+1
390 NEXTY,X
400 SOUND178,2
410 REM*******GAME STARTS******
420 FOR G=1 TO 2
430 PRINT@458,STRING$(11,143):PRINT@458,P$(G)"'S";
440  PRINT@490,STRING$(9,143);:PRINT@490,"FIRST GO";
450 A$=INKEY$:IF A$=""THEN450
460 IF A$<"A" OR A$>"E" THEN GOSUB940:GOTO450
470 A=ASC(A$)-63
480 A$=INKEY$:IF A$="" THEN 480
490 B=VAL(A$):IF B=0 THEN B=10
500 IF A$<"0" OR A$>"9" THEN GOSUB 940:GOTO450
510 IF PEEK(P(B+1,A))=207 THEN GOSUB940:GOTO450
520 POKE P(B+1,A),C(B+1,A)
530 PRINT@490,STRING$(9,143);:PRINT@490,"SECOND GO";
540 A$=INKEY$:IFA$=""THEN 540
550 IF A$<"A" OR A$>"E" THEN GOSUB 940:GOTO540
560 C=ASC(A$)-63
570 A$=INKEY$:IF A$="" THEN570
580 D=VAL(A$):IF D=0 THEN D=10
590 IF A=C AND B=D THEN GOSUB 940:GOTO530
600 IF PEEK(P(D+1,C))=207 THEN GOSUB940:GOTO540
610 POKE P(D+1,C),C(D+1,C)
620 IF C(B+1,A)=C(D+1,C)THEN GOSUB 740:GOTO430
630 FOR X=1 TO 2000:NEXT
640 POKE P(B+1,A),191:POKE P(D+1,C),191
650 SOUND240,1
```

Rem
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Based on the old card game, this is really a test of memory.

Fifty cards are displayed face down and the players take turns to turn over two cards which are seen by both players.

The aim is to remember where the cards are in order to turn over two cards which are the same.

There are more instructions in the program

How it works

50-90	offer instructions, set arrays
100-120	identify players
130-410	shuffle and deal cards
420-680	main game routine
690-740	instructions
750-830	scoring sub-routine
840-940	end routine
950-970	warns of incorrect key-press
990-1160	DATA as per REMs

mber
you
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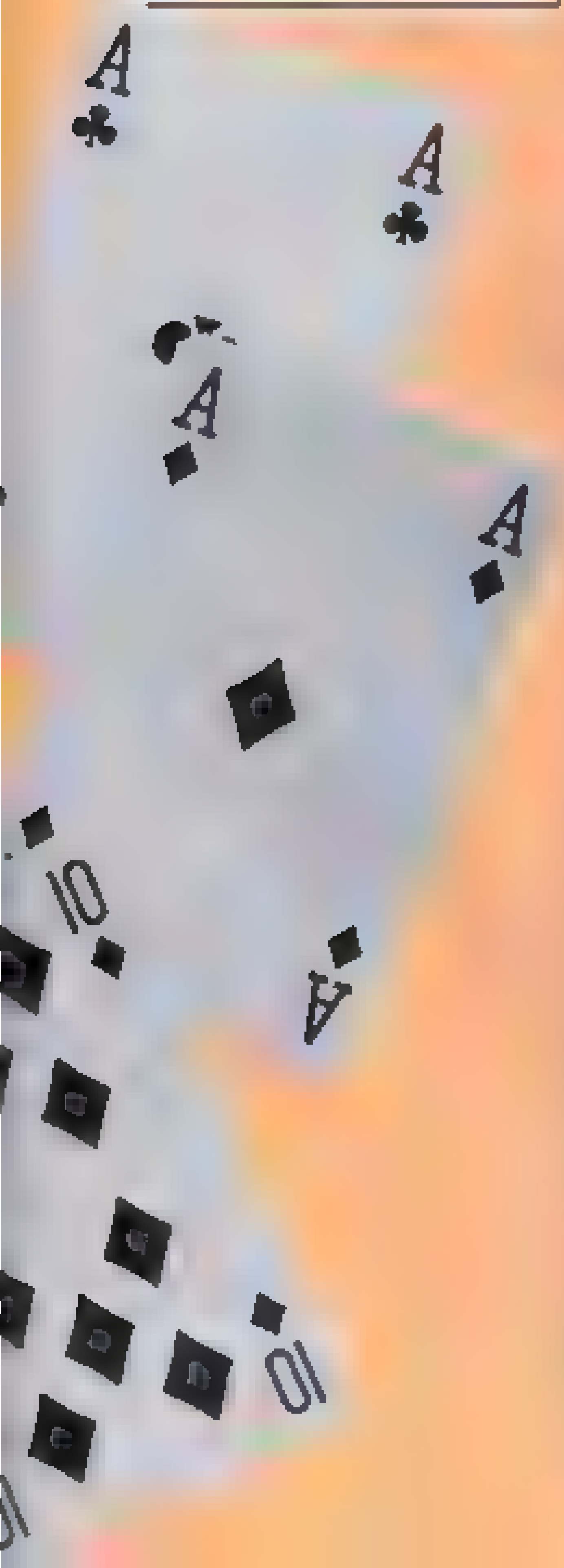
Variables
PS locations
B blanks
CC cards
TT cards after shuffling
C card in 5x10 array
G go
P— player
S1, S2 score 1 and 2



```
660 NEXT G
670 GOTO420
680 CLS:PRINT:PRINT" FIFTY CARDS ARE SHOWN,FACE     DOW
N.THE OBJECT OF THE GAME IS  TO PICK MATCHING PAIRS.
690 PRINT" THE PLAYERS TAKE TURNS TO TURN OVER TWO CARD
S BY KEYING IN THE ROW LETTER,FOLLOWED BY THE      COLU
MN NUMBER.THE CARDS ARE     DISPLAYED FOR A SHORT TIME
AND  THEN TURNED BACK.
700 PRINT" IF THE PLAYER IS SUCCESSFUL IN CHOOSING A PA
IR,ONE POINT IS    ADDED TO HIS SCORE AND THE CARDSARE
REMOVED FROM THE SCREEN.
710 PRINT:PRINTSTRING$(6,159)"PRESS'ENTER'TO START"STRI
NG$(6,159);
720 A$=INKEY$:IF A$=""THEN 720
730 IF A$<>CHR$(13) THEN 730 ELSE 80
740 REM*******WIN ROUTINE******
750 PLAY"T12L4O4DCDCD"
760 S(G)=S(G)+1
770 IF G=1 THEN PRINT@423,S(G);:GOTO790
780 PRINT@443,S(G);
790 POKEP(B+1,A),207:POKEP(D+1,C),207
800 SOUND240,1
810 IF S(1)+S(2)=25 THEN 840
820 RETURN
830 REM******END ROUTINE********
840 PLAY"T5L4O3GABO4L4..CO3G"
850 CLS:IFS(1)>S(2) THEN PRINT@230,P$(1)" WINS" ELSE PR
INT@230,P$(2)" WINS"
860 FOR X=1 TO 1000:NEXT
870 CLS:PRINT@230,"ANOTHER GAME?(Y/N)"
880 A$=INKEY$:IF A$=""THEN880
890 IF A$="Y" THEN RESTORE:GOTO90
900 CLS
910 PRINT@194,"GOODBYE ";P$(1)
920 PRINT@258,"GOODBYE ";P$(2)
930 END
940 REM*******WARNING********
950 PLAY"T10O2CG"
960 RETURN
970 REM*******LOCATIONS********
980 DATA 1024,1027,1030,1033,1036,1039,1042,1045,1048,1
051,1054
990 DATA 1088,1091,1094,1097,1100,1103,1106,1109,1112,1
115,1118
1000 DATA 1152,1155,1158,1161,1164,1167,1170,1173,1176,
1179,1182
1010 DATA 1216,1219,1222,1225,1228,1231,1234,1237,1240,
1243,1246
1020 DATA 1280,1283,1286,1289,1292,1295,1298,1301,1304,
1307,1310
1030 DATA1344,1347,1350,1353,1356,1359,1362,1365,1368,1
371,1374
1040 REM*******BLANKS***********:
1050 DATA 207,49,50,51,52,53,54,55,56,57,48
1060 DATA 1,191,191,191,191,191,191,191,191,191,191
1070 DATA 2,191,191,191,191,191,191,191,191,191,191
1080 DATA 3,191,191,191,191,191,191,191,191,191,191
1090 DATA 4,191,191,191,191,191,191,191,191,191,191
1100 DATA 5,191,191,191,191,191,191,191,191,191,191
1110 REM********CARDS***********
1120 DATA 134,134,150,150,166,166,214,214,230,230
1130 DATA 246,246,137,137,153,153,169,169,138,138
1140 DATA217,217,233,233,249,249,131,131,147,147
1150 DATA 163,163,211,211,227,227,243,243,140,140
1160 DATA 156,156,170,170,220,220,236,236,252,252
```

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An entertaining game for adults and children alike which relies on players being able to remember a set of 32 cards displayed face-down.

Player one starts by selecting one of the cards by pressing A to Z and 0 to 9. The chosen card is then displayed face-up and the player makes another choice. If the two cards match, they are turned over and play passes to the opponent.

Obviously, play becomes easier as play progresses, because the identity of each card is revealed and there are less to remember

The pictures used on the cards are four characters in size and and include houses, trees, flowers, faces and patterns

Unfortunately, this is for two players only. An option to have four or five competing would be nice, as would an option to compete against the computer This would obviously have to rely on a rather unsatisfactory random method, determining whethor or not the computer memorised the cards correctly

J.J.

instructions	75%
playability	70%
graphics	70%
value for money	70%

★★★

Hangmog £3.20

SofTI, 14 Station Rd, Brough, North Humberside

A clever and original idea based on Hangman. The prisoner on the gallows is replaced with a rather unfortunate cat which has strayed into the meat works and is caught on a conveyor belt leading to a mincer

Your job is to guess a word and save moggy

The alphabet is displayed at the top with a conveyor belt underneath, onto which the letters fall once chosen

Depending on whether or not the letter chosen is correct, it falls either down the "best beef" chute or lands on the conveyor belt on which moggy is seated.

When a wrong letter falls onto moggy's conveyor belt it pushes a chunk of meat off the other end and into the mincer As cats have nine lives, moggy has eight chunks of meat in front of him and on the ninth incorrect guess he runs out of luck and falls down the mincing chute.

Unfortunately, it is possible to press the same letter any number of times, although, if the player is careless enough to press the same letter twice, he deserves to lose a life

Overall, well-thought and enjoyable

J.J.

instructions	70%
playability	80%
graphics	95%
value for money	85%

★★★★

ASW Tactics 2 £11

DEJ, from Stainless, 10 Alstone Rd, Stockport, Cheshire

After first reading the instructions, full of high powered jargon, I was filled with enthusiasm. However, apart from some original graphic effects and sounds, it fell far short of my expectations

A U.S naval officer wrote this and it is a simulation based on his experience as a helicopter pilot.

The screen shows an aerial view of a task force, led by a carrier for the helicopter. You, the 'copter pilot, must safeguard the fleet while searching for an enemy submarine

To gain information on the sub's location, the helicopter flies around dropping sonar buoys, using onboard sonar and, if requested, looking for a signal from the surveillance S-3 jet.

Providing a further clue you may request a three-second periscope view of the task force, as seen from the enemy submarine. I failed to believe the accuracy of this when, only having two ships left in the fleet, the periscope still showed three!

After destroying the sub you are greeted by the Stars and Stripes — actually the Squares and Stripes — and a mini firework display. Needs Extended BASIC.

J.W.

instructions	100%
playability	35%
graphics	60%
value for money	45%

★★

Pilot £5.95

Apex, 115 Cresent Drive South, Brighton

A good well-written flight simulator Screen display is clear and the colours are well contrasted The display of the terrain map is blocky, but the runway display is good, shown from above as your plane slowly approaches.

The tape loaded first time to give the option of take off, landing or in flight You are then asked if you require wind effects and the game starts.

In play the program is slow, but gives a reassuring beep when you press any key There is an audible stall warning, otherwise all is quiet The instructions come in a four page booklet as well as a separate sheet giving loading instructions The instructions are easy to understand and are clearly set out, like the whole program The program is easy to use, the slowness being to the players advantage

Overall, fun and very addictive at the start Later on, however, the program did become a bit boring, after I had mastered landing Everything is taken into consideration, such as wind, lift and flap drag.

M H.

instructions	100%
playability	85%
graphics	80%
value for money	95%

★★★★

Go for the gold £7

DEJ, from Stainless, 10 Alstone Rd, Stockport, Cheshire

If you've ever fancied searching for the little people's pot of gold then there's plenty here. They're also so easy to obtain that you'll be bored stiff collecting them.

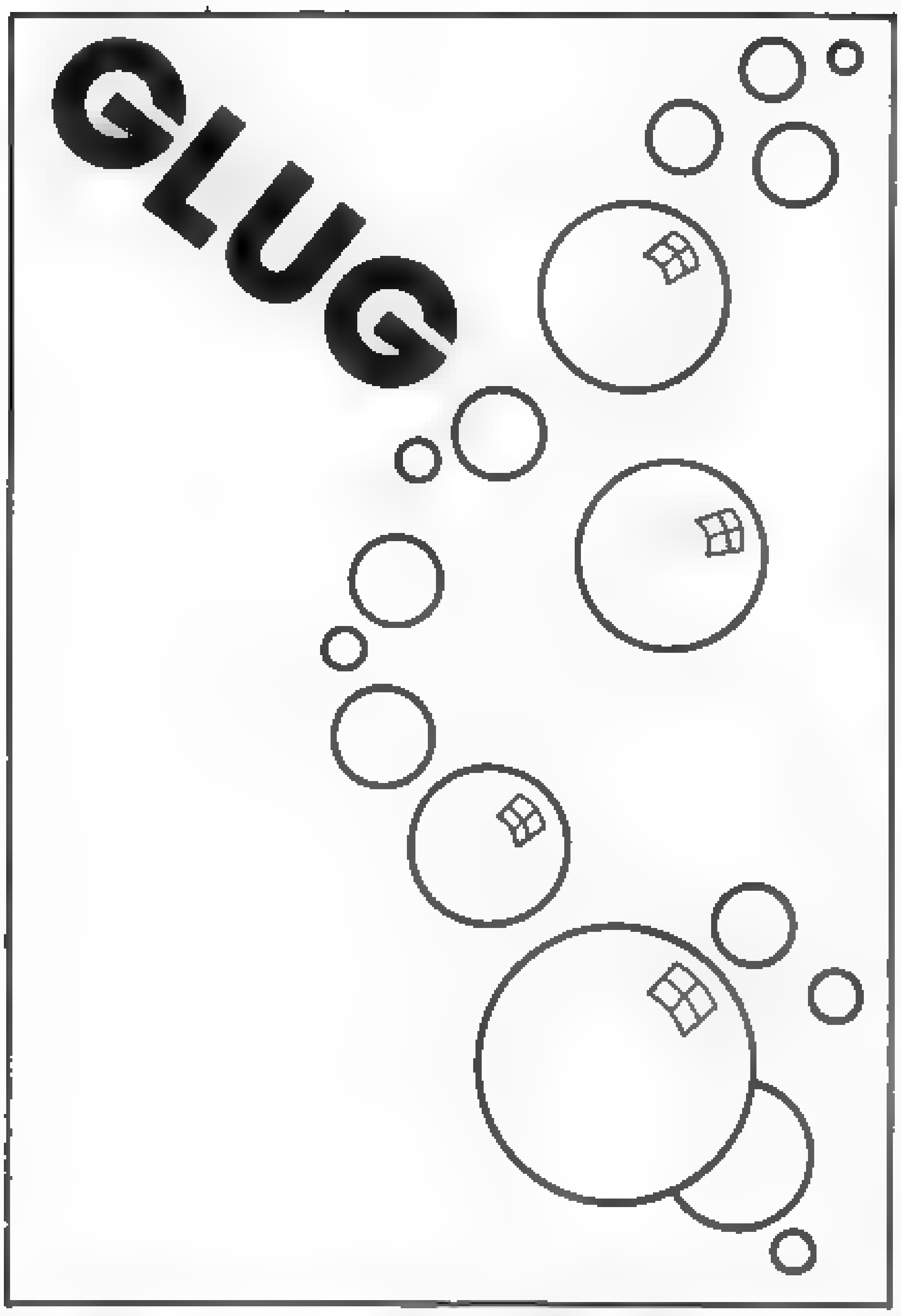
The idea is that you are lost in various forests looking for the gold The screen shows trees, your man and a pot of gold Also in the forest are pixies, to help increase your speed, but in pursuit of your man there's a leprechaun. When he catches you a man is lost. The game continues for as long as you have men. With each pot collected its value increases and you move onto the next forest

Designed for keyboard or joystick, in the keyboard version it seems a gremlin has joined forces with the little people! by pressing any key other than the arrow keys used in the game your man travels around and off the screen at top speed With this method of cheating, pots of gold become yours for the taking At least this provides some amusement in what is otherwise a slow and tedious game Needs Extended BASIC

J.W.

instructions	50%
playability	20%
graphics	40%
value for money	25%

★



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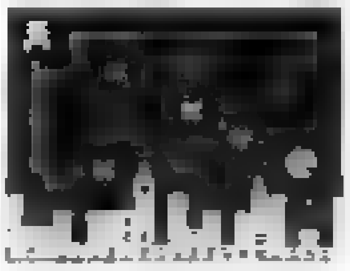

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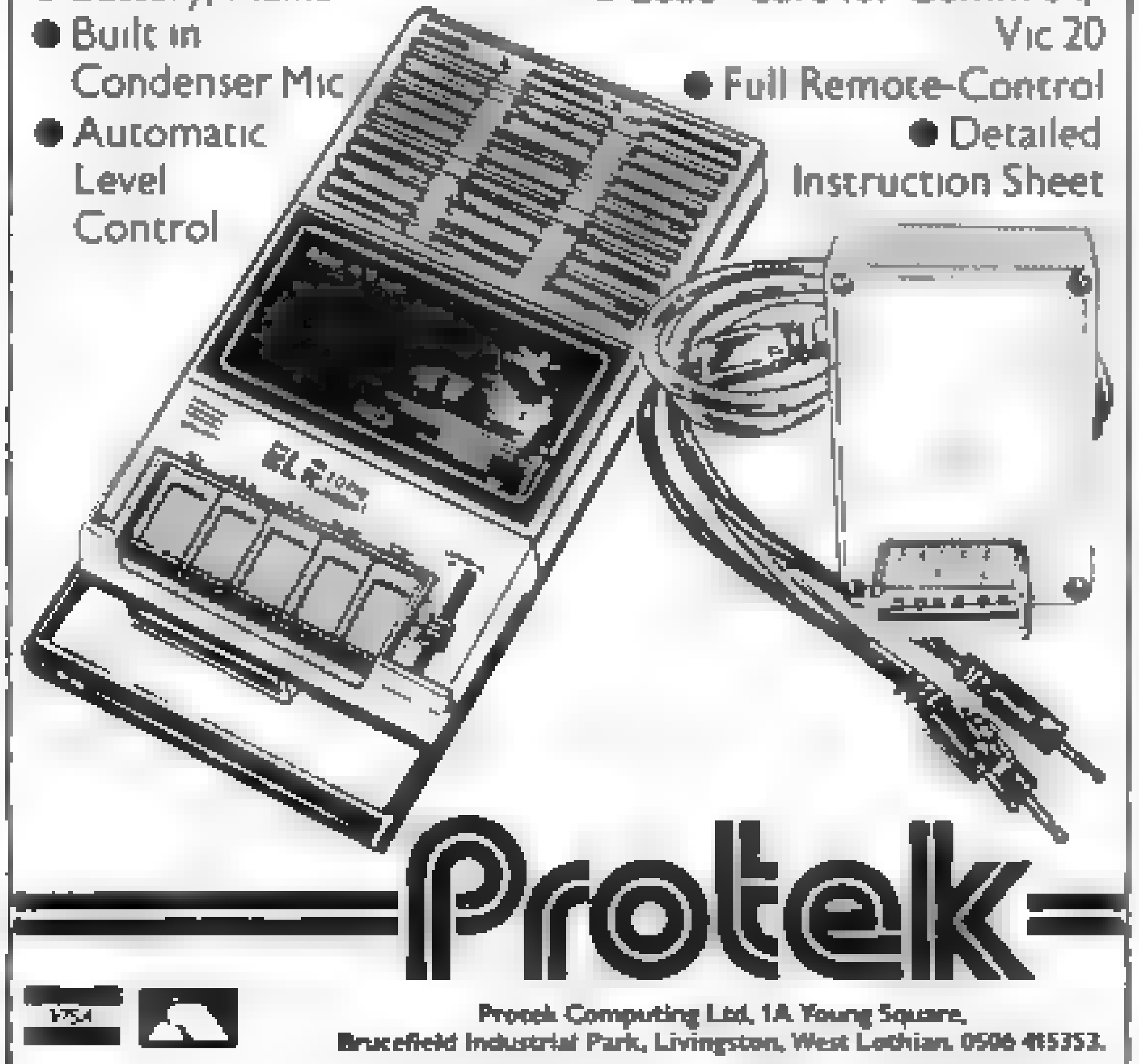

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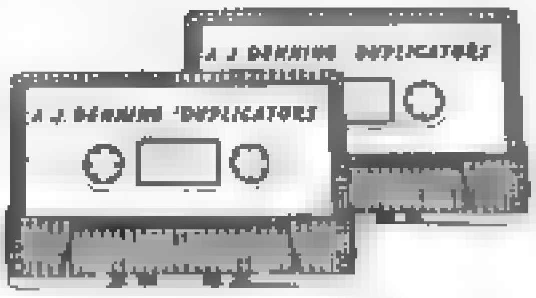

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COURSEWINNER allows you to use the power of your [illegible] get the edge on the bookmaker. The program contains a database [illegible] courses. The ten leading trainers and jockeys, and effect of the draw for different weight carried and race length is detailed for each course. This information [illegible] displayed on the screen for reference at any time.

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- Recent form and starting price
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- [illegible] the going
- Also included in the package is a utility which calculates the return [illegible] placed [illegible]

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POOLSWINNER automatically [illegible] the league table [illegible] The tables for any division can be displayed [illegible]

THE DATABASE is supplied with the package [illegible] over 20000 matches. [illegible] league [illegible] The database automatically updates as [illegible] allowing the program to adapt to recent changes in patterns.

POOLSWINNER is for use with English and Scottish league matches, or cup matches between league sides. The program can be used for all [illegible]

The package is complete with program, 20000 match database and detailed instruction booklet.

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U.S. SCENE

Wear your computer screen on your wrist

When you see someone glancing at his wrist in future, don't assume he is checking the time. He could be looking at his computer's screen.

Seiko Instruments, parent company of Epson, has just announced a computer read-out. And it has also launched a pocket computer meant for use with the watch. The computer communicates with the display via low-frequency electromagnetic waves.

At present you have to be in Japan to buy one, but it should not be long before Seiko sends them here.

The display can present up to four lines of 10 characters each and two computers are available. Details are available on one: it uses a processor similar to the Z80 and has 26K of ROM and 4K of RAM, 71 keys and interface potential to other displays and printers.

★ ★ ★ ★ ★

Not surprisingly, Commodore is expected to hold its position at the top of the league table of home computer makers. Last year it has 37 per cent of market — shipping well over a million computers — and this year's prediction is for 36 per cent.

Atari was second with 16 per cent, expected to improve to 20 per cent this year. Texas, which has now pulled out of the market, was next with 14 per cent.

Then there was Timex (nine per cent) which has stopped selling micros after a lack of success with U.S. versions of the Spectrum and ZX81. Tandy was fifth with eight per cent (prediction: 13 per cent) and then there was everyone else.

Next year Coleco, if it is lucky, will command a whopping six per cent. How's that for some educated guessing? We'll see.

Even though the number of computer retailers doubled last year — and the market this year is expected to rise to $3.6 billion from £2.4 billion — one of America's largest retailers got out of the business.

J C Penney, which had been selling Atari, Coleco and TI, claimed inadequate profits!

The IBM PCjr. is not going to be a significant factor in the home computer market place since most of them sell for well over $1,000 and home computers are defined here as costing less than $1,000.

★ ★ ★ ★ ★

Atari and Activision have joined together to transmit video game and home computer software over the commercial radio waves.

To take advantage of the system, a user would have to connect a special receiver to the video game machine or computer. The bill would come later.

Not wanting to be left out, Control Video, of Virginia, is doing the same thing but via phone lines and modems. Coleco and American Telephone and Telegraph have also announced a similar system using the phone lines.

Playcable, a cable TV company, has been offering games for the Intellivision system for about three years now. Unfortunately, it is about to be left high and dry as Mattel is likely to pull out of the video game business at any time.

That's all for this time. See you next week.

Bud Izen
Fairfield, California

Make your micro work for you

These could make more use of your computer. Read what our reviewers think of them

Crystal
32K BBC £3.45

Scientific, Old Loom House,
Back Church La, London E1
1LS

It's not often you find BBC software at £3.45 so I wasn't sure what to expect. The wrapping is a bit plain, with few instructions

Crystal is not a game! It is designed to foretell the future in the style of Nostradamus. The author describes it as radically different. I agree

One is first confronted with another set of instructions. This still did not create a full image of the program in my mind I was invited to press any key and unknowingly I conformed. It definitely was original. Line after line of morbid prophecies passed before me These are organised into 10 decades with 10 prophecies for each year in the form of four-liners, or quatrains

The mode 7 display contains no graphics and sound is non-existent. The predictions, which to the unaccustomed eye might seem fairly useless, may in fact hold a great and deep philosophical meaning to those of us who can understand the complex forms of Nostradamus

The meanings are often beyond me. However, if you wish to gaze into the crystal ball you should know it is only available by mail

D.B

instructions	40%
ease of use	90%
display	20%
value for money	70%

★•★•★

Broadway Boogie and Classics
32K BBC £4.95

Broadway Electronics, 1 The
Broadway, Bedford

The cassette box is boring and there are no instructions But, don't go away it's not all bad

In fact, this is an interesting little package three pieces of music, all written in BASIC

We start with The Broadway Boogie It's got drums, bass, piano and a trumpet It really uses the BBC's sound capabilities All is well until we reach the finale For a moment or two the piano is out of time

I said there were no instructions. In fact it tells you to type CHAIN "The name of the song" However this is useless because they are written in the wrong order CHAIN "..." is the best idea

Next is the G string, which includes graphics It needs them It's very repetitive and sounds just like the Castella advert I think that's why a smoking cigarette is shown In this program you can choose the key Prelude is more classical A nice piano piece, it is far more interesting

At £4 95 the cassette is fairly expensive but I feel it is worth it for the change from space games

D.B.

instructions	10%
ease of use	80%
display	50%
value for money	80%

★•★•★•★

My Secret File
48K Spectrum
£9.95

Mosaic, from John Wiley &
Sons, Baffins Lane, Chichester,
Sussex PO19 1UD

This started as a Puffin paperback, and is best described as a diary for lazy or unimaginative younsters up to 10. At that, I may be maligning 10-year-olds.

Example pages: MY CLOTHES Sub headings: Favourite outfit for lounging around... three things I most hate wearing... clothes I'd really like would be .. MUM AS I SEE HER· looks her best when .. nags me most about . can get round her by... PARTY RATINGS: whose party what kind rating ..

The author details all possible events and conditions, reducing your whole life to a series of ticks, crosses and the occasional word or underline. Some might give parents unease: "The greatest number of one inch or more shreds, after unpicking a Shredded Wheat".

The computer version loses the cartoons, non-humourous, of the book but allows SAVEing as a datafile, useable yearly, and your very own secret access code Pages are accessed by content menu and you type one-word answers to "People gasp with shock when they see my..." The mind reels!

D.C.

instructions	85%
ease of use	75%
display	50%
value for money	40%

★•★

Optimon
32K BBC £6.95

Optima, 36 St Petersgate, Stockport SK1 1HL

A machine code monitor program for the cassette-based BBC, this certainly has features which make it a true monitor

There are block move and copy routines, string or hex searches and logical operations on hex or binary numbers, including subtraction and addition — a flexible range of operations which the monitor can help with and can make very simple indeed

There is one major drawback it resides in the upper reaches of user memory (&6700 to &7C00) Try to execute a routine which changes the screen mode and the monitor will be over-written and gone So you really do need to know your needs before buying this, or any other, monitor

The most impressive part of the package is the excellent instruction booklet, particularly its introduction It is very unusual for a product of this type to take you step by step through its capabilities. It's ideal therefore for newcomers to machine language

In fact, that sums up the program nicely Beginners will find this ideal for a few months but experienced machine code writers will be frustrated by its location and lack of certain facilities (e g single stepping)

D.C.

instructions	100%
ease of use	75%
graphics	N A
value for money	80%

★•★•★•★

First Aid
48K Spectrum
£4.60

Eastmead Computer Systems,
Eastmead House, Lyon Way,
Camberley, Surrey

Sadly, this is a program in search of a purpose It purports to be a source of advice when first aid is needed, not a "learn about first aid" program But by the time the program has loaded, your patient could be dead'

Eastmead has indulged in an orgy of SCREENs to be loaded, with logo, series logo and finally program name. This takes 3/ minutes! And you haven't loaded the program yet. When you have, thee's an index then four blocks of code on different parts of the cassette. When you eventually reach what you want, there is little in the way of practical help It merely helps you decide whether to call a doctor.

As a program, therefore, it's poor. More seriously, it starts with a disclaimer for errors and omissions, telling you not to proceed unless you accept it This is not, however, on the inlay card So you could have a program which you can't accept, but which you've paid for. It ought to be rectified. But frankly I wouldn't recommend you to buy this

D.M

instructions	65%
ease of use	20%
display	50%
value for money	0%

★

Software to use and to learn

A mixed bag of utilities and educational programs examined by our experts

The Night Sky
32K BBC £9.90

Bridge Software, 36 Fernwood,
Marple Bridge, Stockport SK6
5BE

This is meant for those who have a previous interest in astronomy and for those who might be interested if they knew more The core is a display which can show the stars visible anywhere on earth on any day between 1975 and 2000, at any time and looking in any particular direction. The display is very easy on the eye despite being in only two colours. The brightness of each star is represented by four sizes of dots and you are able to select each constellation using its International Astronomical Union abbreviation

The facilities you are given to control the display allow you to use this program for learning too. The manual, simple but comprehensive, suggests you choose the ANY option which means it will search its memory for a visible constellation and display it for you to learn or guess.

One of the greatest uses for those already knowledgeable in the area will be to pretend they are in a different location and then sample its stellar offerings. The only criticism I have is that when you set up a data it can't tell you if it's cloudy' D.C.

instructions	90%
ease of use	95%
graphics	90%
value for money	90%

★ ★ ★ ★ ★

Maths Orbiter
32K BBC £9.90

Elm Computers, 59 Bateman Rd,
East Leake, Loughborough
LE12 6NN

The only way to describe this is as an arithmetic text book with pictures, sound and automatic marking. That is really all there is to say. If you feel your child needs practice in one or all of the four rules of number then this may be for you! I think maths has much more to offer than this and that programs like this can do much more harm than good

The purpose of your answers is to countdown, launch, orbit and land your spacecraft. The grahics are fair but not remarkable The on-screen prompts are all in capitals which makes them difficult for younger children despite the good use of double height characters in parts. If you are unfortunate enough to get a problem wrong the correct answer is flashed on the screen for far too short a time. This means it is difficult to learn from mistakes. The levels are difficult to control, you cannot specify maximum numbers, simply an arbitrary level number, and there is no facility for negative or decimal numbers. A very disappointing program of very limited use. D.C

instructions	30%
ease of use	45%
graphics	60%
value for money	30%

★ - ★

Animated Alphabet
Dragon 32
£4.95

Dungeon Software, Milton
House, St John St, Ashbourne,
Derbys

Designed for the early reader, this is a graphical introduction to the alphabet One is first given the choice of watching the whole display or pressing a key for each picture Each letter is shown in capital form with an example word beginning with that letter and a picture corresponding to the word, all in high resolution graphics. Each display either has a musical piece of some action. Particularly good ones were hammer, drum queen and zip.

Graphics are clear and interesting, sound well-used and overall a well-written program. But there are some detractions. This program helps to reinforce letter recognition but is it really versatile enough to be of value? There are no options or changes in action as the alphabet is run through A collection of words displayed graphically allowing some form of interaction after the alphabet may have been a good idea perhaps But the program certainly needs some additional stimulus to make it more worthwhile in the long term

C.G.

instructions	50%
ease of use	70%
graphics	90%
value for money	60%

★ ★ ★

Address Manager — Plus 80
48K Spectrum
£19.95

OCP, PO Box 99, Oxford

A very rapid machine code program for storing up to 400 full names, addresses, post codes and phone numbers, and retrieving them to order OCP has 42 characters per line onto the screen instead of 32, and entries and alterations are made by moving the cursor to the required point, then typing. Your input appears in the right place, instead of the bottom two lines.

Though not set up for Microdrives, the program can load and save files of data to order from the menu. An additional, and very useful feature, is that each name can have up to three identifying codes attached and the address list sorted by these attributes.

The output is where the Plus 80 comes in This will drive a Centronics printer through the Kempston interface to produce full 80 columns and thus double width, double height and alternative type faces. onto plain paper, labels and so on It won't however, drive the ZX Printer, you need the £9.95 version for that. D.M.

instructions	90%
ease of use	95%
display	100%
value for money	70%

★ ★ ★ ★

Keydefine
48K Spectrum
£4.95

Scientific Software, 37
Cottesmore Rd, Hessle, North
Humberside

A very impressive tool kit for those who write programs It's complete with printed instructions covering three sides of A4, and menus for the main program, Microdrive routine and the mini-keydefine enclosed in polythene wallet

It autoruns to show basic instructions leading to the menu, followed by memory allocation of the routines and a menu of options. Twenty three keys are said to be pre-defined with 12 keys available for redefining — but there appears to be 16 predefined for programmers and eight for use Holding down the space bar, pressing required key and releasing both produces the routine as a direct command which can be edited or executed with the enter key

Some of the most valuable are: **A** turn Auto line number on/off; **L** line number trace on/off; **R** renumber BASIC program, **X** hex to decimal conversion; **I** decimal to hex, **H** crosshatch screen A block delete routine is missing, but a key can be redefined and added to the menu.

T.W.

instructions	75%
ease of use	70%
display	N/A
value for money	60%

★ ★ ★

Keep your mi
the road... an
guess the wo

Remember Andrew Gardner's three programs in HCW 54? Here's two more from him to test your driving skill and your knowledge of words

[illegible]

Keep your car on the road for as long as possible — it's not as easy as you might think

At the start you choose a skill level which controls how much the road twists. On the higher levels you're allowed to stray onto the grass verge to give you more of a chance!

You are given a 3D view of the road and further ahead there is a blanket of fog You'll also be given a random day or night scene.

Hint: As in real life, moving the car left seems to move the road right.

How it works

30 selects low-resolution graphics, switches off key-click/cursor
40-90 the whole game is a series of sub-routines
1000-1280 set up the large number of user-defined graphics
2000-2050 select skill level
2060-2200 set up main variables
3000-3310 PLOT fog area, road and driver's cockpit, PLOT all screen colours
4020-4090 make random and automatic adjustments to road
4100-4125 read keyboard, check for crash
4140-4420 check road is still within screen limits
4510-4550 change position of road according to keypress
5000-5120 crash, PRINT score, wait for key

Variables

TR(W) array holding position of each part of the road
A$-E$ hold road segments to be PLOTted
F$ holds background to road
P$(W) holds fog graphics
K/M move road on key-press/random movements
P/K$ keyboard values
SL skill level
S% current score
H% high score

Hints on conversion

CHR$ statements can be removed
CLS clears the screen
PAPER/INK set background/foreground colours
PLOT x,y is equivalent to PRINT AT Places string given at position x (0-38), y (0-26). PLOTting a number acts as a colour attribute
WAIT n creates a pause for n milliseconds
SPC can be replaced by TAB or removed
PEEK (520)/**KEY$** reads the keyboard
EXPLODE, PING are sound commands and can be removed or replaced

[illegible]

This game will pick a word from a list of 290 and you must guess it before running out of lives.

At the start the number of letters is indicated by full stops. You can enter a single letter or a whole word.

If the letter is correct it will be placed in its correct position/s in the line of full stops.

If wrong, it will be added to a list to remind you what you have already entered The game will finish if you have made 10 incorrect guesses

How it works

60-100 set up variables
500-570 choose word, set up guess string variables with appropriate number of full stops
1000-1130 PRINT screen, wait for next guess
2000-2090 check if word has been guessed, update variables controlling screen set up, check if all lives are lost
3000-3050 check if letter guessed is in word, if it is add it to guess string
4000-4090 failure routine
5000-4090 word guessed routine
6000-6580 DATA for 290 words

If the word you enter is correct or if you have completed the word by entering the last letter you will be congratulated and game will re-start.

The screen will also display your remaining lives

Variables

G$ guess string to show progress
GI$ remaining lives
L1$ guessed letters
W$ word to be guessed
I$ your guess
GI%, LI%, G% used in SPC command when PRINTing the screen
W% length of word to be guessed

Hints on conversion

POKE 618,10 and the screen POKEs can be removed
PLAY is a sound command and can be replaced or removed

When converting to other computers, the word guessed routine would have to be replaced by a display of your own design.

● See also Hints on conversion for Oric Rally

Listing 1 — Oric Rally

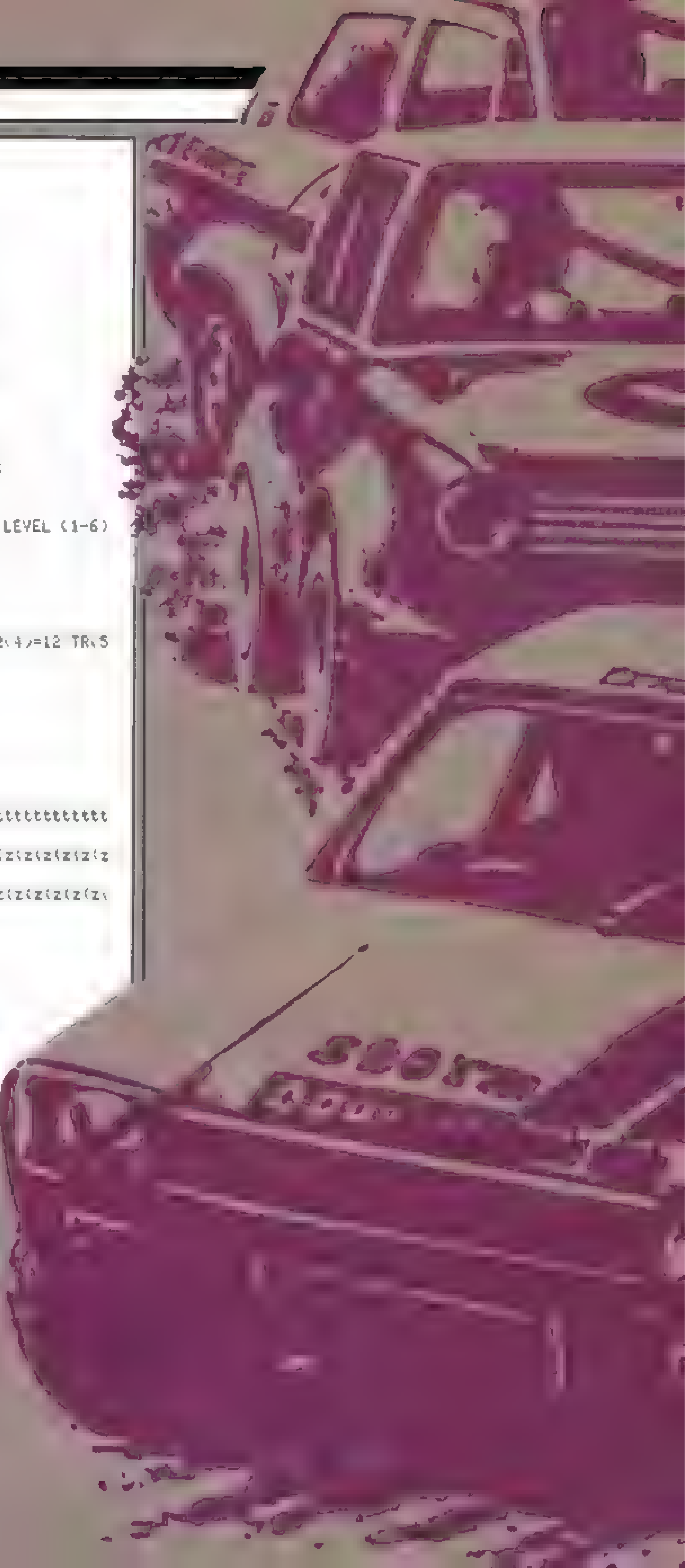
```
10 REM ** ORIC-RALLY **
20 REM BY A.P.GARDNER
30 LORES0 PRINTCHR$(17)CHR$(6)
40 GOSUB1000 'UDG
50 GOSUB2000 'VARIABLES
60 GOSUB3000 'SCREEN
70 GOSUB4000 'MAIN GAME
80 GOSUB5000 'END
90 GOTO50
990 REM USER DEFINED GRAPHICS
1000 FORP=(46080+(97*8))TO(46080+(123*8)+7)
1010 READU POKEP,U NEXTP RETURN
1020 DATA1,2.2,4,8,16,16,32
1030 DATA32,16.16,8,4,2.2.1
1040 DATA63,0.0,0,0,3.30,41
1050 DATA63,0,0,15,16,32,0,32
1060 DATA63,0,0,63 0,0,0,0
1070 DATA63.0,0,60 2,1 0,1
1080 DATA63,0,0,0,0,48.30,37
1090 DATA54,2,36,60,56,48,48,32
1100 DATA27.16.9.15,7,3.3,1
1110 DATA1,2,3,3,7,15,15,31
1120 DATA32,16.48.48.56.60,60.62
```

```
 1130 DATA0,0 0,0,3,13,21,53
 1140 DATA0,0,0,0,63,0,0,0
 1150 DATA0,0,0,0,48,44,42,43
 1160 DATA0,12,18,33,33,18,12,0
 1170 DATA53,53,53,53,53,53,53,53
 1180 DATA43,43,43,43,43,43,43,43
 1190 DATA1,3,3,7,15,31,31,63
 1200 DATA32,48,48,56,60,62,62.63
 1210 DATA63,63,63.63,63,63,63,63
 1220 DATA63,62,62,60,56,48,48,32
 1230 DATA63,31,31,15,7,3,3,1
 1240 DATA53,54,54 52,56,48,48 32
 1250 DATA43,27,27,11.7,3,3,1
 1260 DATA0,0,0,0,63,63,63,63
 1270 DATA42,0,42,12,44,20,32,22
 1280 DATA51,33,18,33,8,35,8,53
 1990 REM SET SKILL LEVEL/VARIABLES
 2000 CLS
 2010 PING
 2020 PRINT PRINT PRINT"WHAT SKILL LEVEL (1-6)
"

 2030 PRINT"(1 IS THE EASIEST)"
 2040 PRINT INPUTSL
 2050 IFSL<1ORSL.6THEN2000
 2060 SL=SL 2 K=0 M=0
 2070 TR(1)=15 TR(2)=14 TR(3)=13 TR(4)=12 TR(5
)=11
 2110 S%=0
 2120 REM ****************
 2130 A$="         "
 2140 B$="           "
 2150 C$="             "
 2160 D$="               "
 2170 E$="                 "
 2180 F$="tttttttttttttttttttttttttttttttttttt
"

 2190 P$( ) ="z{z{z{z{z{z{z{z{z{z{z{z{z{z{z{z{z
 z{"
 2200 P$ 2 ="{z{z{z{z.z{z{z{z.z{z{z{z{z{z{z{z{
z{z
 2210 RETURN
 2990 REM SET UP THE SCREEN
 3000 CLS PAPER0 INK0
 3010 FORN=5TO14
 3020 J=INT(RND(1)*2)+1
 3030 PLOT1,N,P$(J)
 3040 NEXTN
 3050 FORN=15TO19
 3060 PLOT1,N,F$
```

ad on
d
rds



```
 3070 NEXTN
 3080 PLOT15,15,A$
 3090 PLOT14,16,B$
 3100 PLOT13,17,C$
 3110 PLOT12,18,D$
 3120 PLOT11,19,E$
 3130 PLOT2,20,"tttttttttt    lmnmno    tttttt
tttt"
 3140 PLOT2,21,"t         t  yrpo  oqsy  t
   t"
 3150 PLOT2,22,"t         t  ttwcdfgxtt  t
   t"
 3160 PLOT2,23,"tttttttttt rtujhbaikvts tttttt
tttt"
 3170 N=INT(RND(1)*2)
 3180 IFN=0THENP=0 I=6 C=1
 3190 IFN=1THENP=6 I=7 C=5
 3200 R=2 CB=16
 3210 PAPERP INKI
 3220 FORN=15TO19
 3230 PLOT0,N,R
 3240 NEXTN
 3250 FORN=20TO23
 3260 PLOT0,N,CB PLOT1,N,C PLOT38,N,(P+16)
 3265 NEXTN
 3270 PLOT4,21,"SCORE"
 3280 PLOT27,21,"HI-SCORE"
 3290 PLOT10,22,C
 3300 PLOT34,22,C
 3310 RETURN
 4000 REM * MAIN GAME *
 4020 K=0 M=0
 4030 TR(2)=TR(1)-1
 4040 TR(3)=TR(2)-1
 4050 TR(4)=TR(3)-1
 4060 TR(5)=TR(4)-1
 4070 R=RND(1)
 4080 IFR>.5THENM=SL GOTO4090
 4085 M=-SL
 4090 GOSUB4400
 4100 P=PEEK(520)
 4110 K=(P=188)-(P=172)
 4120 GOSUB4500
 4125 IFTR(5)<(8-SL)ORTR(5)>(14+SL)THENRETURN

 4140 FORN=15TO19
 4150 PLOT1,N,F$
 4160 NEXTN
 4170 PLOTTR(1),15,A$
 4180 PLOTTR(2),16,B$
 4190 PLOTTR(3),17,C$
 4200 PLOTTR(4),18,D$
 4210 PLOTTR(5),19,E$
 4230 S%=S%+1
 4240 IFS%>H%THENH%=S%
 4250 PLOT3,22,STR$(S%)
 4260 PLOT27,22,STR$(H%)
 4270 GOTO4020
 4400 REM CHECK THAT ROAD NOT OFF SCRN
 4410 IF(TR(1)+M)>5AND(TR(1)+M)<21THENTR(1)=TR
(1)+M
 4420 RETURN
 4500 REM CHANGE POS OF TRACK BY YOU
 4510 K=K*SL
 4520 FORN=1TO5
 4530 TR(N)=TR(N)+K
 4540 NEXTN
 4550 RETURN
```

```
 4990 REM YOU HAVE CRASHED
 5000 PAPER7
 5010 WAIT40
 5020 PAPER1
 5030 EXPLODE
 5040 WAIT150
 5050 CLS INK0
 5060 PRINT PRINT PRINTSPC(4)"YOU'RE CAR'S A R
IGHT-OFF!"
 5070 PRINT PRINT PRINTSPC(4)"YOU MANAGED TO S
CORE ",S%
 5080 PRINT PRINTSPC(5)"THE HIGH SCORE IS ";H%

 5090 PRINT PRINT PRINTSPC(4)"PRESS A KEY TO P
LAY AGAIN"
 5100 K$=KEY$
 5110 K$=KEY$ IFK$<>""THENRETURN
 5120 GOTO5110
```

```
 10 REM       WORDMAN

 20 REM    BY A.P.GARDNER

 30 REM
 40 REM SET VARIABLES/COLOURS
 50 REM
 60 PAPER7 INK0 CLS
 70 POKE618,10
 80 G$="" G1$="**********" G2%=10
 90 G1%=17-(INT(LEN(G1$)/2))
 100 L1%=17-(INT(LEN(L1$)/2))
 470 REM
 480 REM CHOOSE WORD
 490 REM
 500 FORN=1TO(INT(RND(1)*290)+1)
 510 READW$
 520 NEXTN
 530 W%=LEN(W$)
 540 FORN=1TOW%
 550 G$=G$+"."
 560 NEXTN
 570 G%=17-(INT(LEN(G$)/2))
 970 REM
 980 REM SET UP SCREEN
 990 REM
 1000 CLS
 1010 INK7
 1020 PRINT PRINTSPC(13)"WORDMAN"
 1030 PRINT PRINT PRINT PRINT
 1040 PRINTSPC(12)"LIVES LEFT"
 1050 PRINT PRINTSPC(G1%),G1$
 1060 PRINT PRINT PRINT PRINT
 1070 PRINT"LENGTH OF THE WORD/CORRECT LETTERS
"
 1080 PRINT PRINTSPC(G%),G$
 1090 PRINT PRINT PRINT PRINT
 1100 PRINTSPC(6)"LETTERS YOU'VE GUESSED"
 1110 PRINT PRINTSPC(L1%),L1$
 1120 INK0
 1130 PRINT INPUT"ENTER GUESS PRESS [RETURN]";
I$
 1970 REM
 1980 REM CHECK IF LETTER IS GUESSED
 1990 REM
 2000 IFLEN(I$)<>1THEN2020
 2010 GOSUB3000
 2020 IFG$=W$THEN5000
 2025 IFI$=W$THEN5000
 2030 IFLEN(I$)=1THENL1$=L1$+I$
 2040 G1%=17-(INT(LEN(G1$)/2))
 2050 G%=17-(INT(LEN(G$)/2))
 2060 L1%=17-(INT(LEN(L1$)/2))
 2070 IFF=0THENG2%=G2%-1 G1$=LEFT$(G1$,G2%)

 2080 IFG1$=""THEN4000
 2090 GOTO1000
 2970 REM
 2980 REM CHECK IF LETTER IN WORD
 2990 REM
 3000 F=0 FORN=1TOW%
 3010 L$=LEFT$(G$,(N-1)) R$=RIGHT$(G$,((W%-N))
)
 3020 M$=MID$(W$,N,1)
 3030 IFI$=M$THENG$=L$+M$+R$ F=1
 3040 NEXTN
 3050 RETURN
 3970 REM
 3980 REM YOU COULD NOT GUESS IT
 3990 REM
 4000 PAPER0 INK7 CLS
 4010 PRINT PRINT PRINT PRINT PRINT PRINT PRIN
T PRINT
 4020 PRINT PRINTSPC(12)"HARD LUCK!"
 4030 PRINT PRINTSPC(7)"THE WORD IS ",W$
 4040 FORM=1TO3
 4050 PLAY0,1,1,100 WAIT50
 4060 PLAY0,1,1,100 WAIT150
 4070 NEXTM
 4080 WAIT100
 4090 RUN
 4970 REM
 4980 REM YOU GUESSED IT
 4990 REM
 5000 CLS INK7
 5010 FORN=48080TO49100STEP20
 5020 POKEN,INT(RND(1)*6)+16
 5030 PLAY0,1,0,10
 5040 NEXTN
 5050 PLOT12,13,"YOU GOT IT!"
 5060 WAIT500
 5070 RUN
 5970 REM
 5980 REM DATA BANKS
 5990 REM
 6000 DATAABBREVIATE,ACCELERATE,ACROBAT,ADVENT
URE
 6010 DATAAGENDA,ALARM,ALTERNATE,AMPLIFY
 6020 DATAANIMAL,ANTIDOTE,APPEASE,ARCHITECT
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 6130 DATACRISIS,CRY,CURE,DAGGER,DASTARDLY
 6140 DATADECLINE,DEGREE,DEMONSTRATE,DENIM
 6150 DATADESCEND.DUECE,DIAPHRAGM,DILUTE
 6160 DATADISADVANTAGE,DISGUST,DISSIPATE,DIVER
GE
 6170 DATADULE.DOZE,DRINK,DULCET,EARTH
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,ENJOY
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 6240 DATAGIRDLE.GNOME,GOSPEL,GRAND,GRIND
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 6300 DATAJET,JUBILANT,KEEL,KINDERGARTEN,KNIFE

 6310 DATALABEL,LANGUAGE,LAUGH LEAGUE,LETTER
 6320 DATALIFE.LINK,LIZARD LOOK,LUNGE
 6330 DATAMADAM,MAN,MANUFACTURE,MASS,[illegible]
 6340 DATAMELT,METEOR,MILL,MINUTE,MODERATE
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 6550 DATAUNEVEN,UNIVERSE,UNSETTLE,URN,VAPOUR
VAR
 6560 DATAVERB,VIGIL,VITAMIN,WALK,WASH,WEEP
 6570 DATAWHALE WHOSE WISH,WORM,XYLOPHONE,YOU
 6580 DATAZERO
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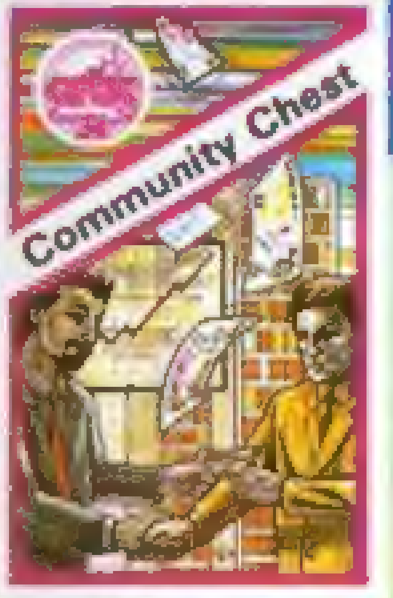

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